Analysis of Operation Monitoring Data

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(Murgin head) 1.88 m'/min/unit kend part of frexible art of flexible hose Part of flexible hose 'art of mild steel Sy pressure gage -H. 12(X) c= 130 Flexible hose Remark 1.0 m no measurement no measurement Not applicable Not applicable 7th operation Not operated No unit Not set Not ket Not xet 0'00'0 8.942 00.00 () (X) %0 Not applicable Not applicable 6th operation Not operated Not set Not set No unit Not set-.8.942 0,000,0 00.0 %0 00.0 no measurement Not applicable Not applicable 5th operation Not operated No unit Not set Not Xet 8,942 Not set 0.000 00.0 %() 0,00 no measurement 4th operation Not upplicable Not applicable Not operated No unit Not set 8,942 Not set Not set 0.000 00,0 0.00 -----%0 no measurement Not applicable 3rd operation Not applicable Not operated No-unit Not set Not set Not set 0.000.0 8.942 0.00.0 2.0 0.00 no measurement 2nd operation Not applicable Not upplicable Not operated 0.00 8.942 0,000 Not Not Net - M 0,00.0 Not 0% 1st operation · Operated 1.367 1197.35 199:59 0.868 0,748 1.372 1350 2.103 3.470 0.142 7 0,164 2.605 8,00 8.942 30.05 1 unit 0:59 4.00 2.24 1 on Σ (Flexible pipe) (Flexible pipe) m?/mim/unit Recorded head suction-side ht (m) Ratio kw/m³ loss į lows ŝ 8 sul . Ξ Ē S 1) River water level at Chang Chhu Pump center level Unit of Pump Suction head Pump Bend Position No. Time (min) NPSI I(av)" NPSII(rq)* Temperature Discharge Balance 7/12/95 Pump No. hipe length lead loss *7*, U 4) Atmospheric Presser hend vapor head Operated 5) Saturated HSAN (9 Date: ioss $\widehat{}$ ล

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1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf)-

7) Cost

3) *1 Net Positive Suction Head Requirement

+) *2 Net Positive Suction Head Available

	Kemark							**************************************	· · · · · · · · · · · · · · · · · · ·	1.88 m/min/unit	By pressure gage		Part of mild steel	Bend part of frexible	flexible hose	Part of flexible home	c= 130	Part of the subjectives	1:1 1200				▲☆ ``	. 1.0 e	(Margin head)
	7th operation	Not operated	•	No unit	Not set	Not set	Not set	1 1 1	0,000	0%	0.(X)			•	0,00	· • •	•	•	8.942	no measurement	1	Not applicable	Not applicable	١	4
	6th operation	Not operated	1	No unit	Not set	Not set	Not set		0,000	0%	0.00			•	0.00		•		8.942	no measurement	•	Not applicable	Not applicable		
	5th operation	Not operated	•	No unit	Not set	Not set	Not sct		0.000	0%0	0.00	•	•		00'0		•	1	8.942	no measurement	•	Not applicable	Not applicable	·	
	4th operation	Not operated	•	No unit	Not set	Not set	Not set	1	()())	%()	00.0				0.00	1	•		8.942	no measurement	•	Not applicable	Not applicable	• ;	•
	3rd operation	Not operated	•	No unit	Not set	Not set	Not set	•	0.00	%()	0.00				0.00	•				no measurement		Not applicable	Not applicable		
	2nd operation	Operated	08'9611	a tunit a	No.1		1200,58	10:1	2.430	129%	5,50	3.78	0.125	0.755	8,000	0.843	2.080	72	8.942	<u>51</u>	0.174	1438	1.845	2.000	0.155
	1st operation	Not operated	1	No unit	Not set	Not set	Not set		0.000	%0	00.0	- - - -			8.00					no measurement		Not applicable	Not applicable		
	: }		ng Chhu	unp. 5 se en en		lo,	ter level	n)	m?/min/unit	Ĩ.	Recorded head suction-side	derive hs ==	loss	loss		hf (m)	(Flexible pipe)	(Flexible pipe)	m		m		, m	1	(1) A statement of the second seco
7/13/95			River water level at Chang Chhu	- Unit of Pump.	Pump No.	Position No.	Pump center level	Time (min)	Discharge) 	Recorded In	Suction head	lyunp	Bend	Pipe length	Head loss		U	ic Presser	Temperature	d head	s	NPS11(rq)*	NPSI (av)	Balance
Date :			1) River water	2) Operated						·		3) loss							4) Atmospheric Presser	5) Saturated	vapor head head	HSAN (9			

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

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kw/m

7) Cost

2) Coefficient of flow rate (C) is calculated applying head loss (hf). 3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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Science Action		Date :	S0/T1/L					Est anometon	feb accention	7th overation	Remark
1) Recorded Not operated <			a a Arganistana ang ang ang ang ang ang ang ang ang	1 st operation	2nd operation	3rd operation	4th operation	operation			
1) River varet feel af Chang Chiu 1/6, 30 No unit				Operated	Not operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) Rater water front at Lange Lunu Not mit				1105 201		A more relation of the second		•	•	•	
2) Operated Unit of Party I unit Not set	н С	tiver water h	evel at Chang Chinu				Moranit.	No mit	No unit	No unit	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2)	Operated	Unit of Pump	1 unst	No unit	NONINI				Mart 194	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	ì		Pump No.	No.1	Not set	Not set	Not set	Not set	Not set		
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $:			10	Nol set	Not set	Not set	Not set	Not set	Not set	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			Position No.				Mat and	Not vel	Not set	Not set	
Time (mi) 0.59 (mid) 0.000 (mid) 0.000 0.000 (mid) 0.	.		Pump center level	1200.58	Not set	Not set	UNI NCI			2	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			Plane (min)	0:50		•			• • • • •		1
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1.000 and		~!		11 1111	0000	0.000	0,000	0,000	0000	
3) loss Ratio 126% 0.00			· ·	2.369		700	707	()%	0%	%()	1.88 m'/mm/unit
3) lossRecorded head startion-side5.00.000.000.000.000.000.000.00Pumploss0.119 4.28 0.119 4.28 0.000.000.000.000.00Pipe lengtiloss0.718 8.00 0.000.000.000.000.000.00Pipe lengtiloss0.718 8.00 0.000.000.000.000.00Pipe lengtiloss0.142 8.00 0.000.000.000.00Pipe lengtilossN((n))0.386 8.00 0.000.000.00Pipe lengtilossN((n))0.386 8.00 0.442 8.942 8.942 8.942 A Autinospheric Pressern 8.942 8.942 8.942 8.942 8.942 8.942 $1.1.1$ S startedolTemperioreu0.164Not applicableNot applicableNot applicableNot applicableNot applicableS) NPSHSn 0.243 Not applicableNot applicableNot applicableNot applicableNot applicableS startedolTemperiorn 0.00 no 0.00 0.00 0.00 0.00 0.00 S startedolTemperiorn 0.164 Not applicableNot applicableNot applicableS NPSHNPSHNPSHNNSU(rgol* 0.243 Not applicableNot applicableNot applicableS NPSHNPSHNPSHNNSU(Ratio	126%	0.70	11/0			27,000	0.00	By nevering Parts
3) lossSucient hardlis 4.2% 4.2% Print of mPumploss 0.119 loss 0.119 loss 0.119 loss 0.00 0.00 lossPumploss 0.119 gam 0.00 0.00 0.00 0.00 0.00 loss 0.00 Pipe lengthloss 0.718 gam 0.00 0.00 0.00 0.00 0.00 0.00 Pipe lengthloss 0.3% gam 0.00 0.00 0.00 0.00 0.00 Pipe length 0.3% gam 0.00 0.00 0.00 0.00 0.00 Principle 0.3% 8.902 8.942 8.942 8.942 8.942 J. AtmosphericPresent n 0.164 nonessurcementno measurcement n n StatratedTempernue n 0.164 Not applicableNot applicableNot applicableNot applicableStatratedTempernue n 0.164 Not applicableNot applicableNot applicableNot applicableStatratedTempernue n 0.164 Not applicableNot applicableNot applicableNot applicableStatratedTempernue n 0.164 Not applicableNot applicableNot applicableNot applicableStatrated n 1.0 0.00 0.00 0.00 0.00 0.00 0.00 Statrated n n 0.00 0.00 0.00 <			Dama hand suction-side	5.50	00'0	00:0	000	0.00	0,00		
3) lossSuutoon haad bonsIns \dots				20		•		•	•	• •	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	6	loss		07.4							Part of mild stool
				0.119				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	1	tend nurt of frexible
Pipe length I lend loss $h(m)$ 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 Γ Γ $(\Gamma exible pipe)$ 0.386 0.00 0.00 0.00 0.00 0.00 0.00 Γ Γ $(\Gamma exible pipe)$ 0.386 0.342 8.942 8.942 8.942 8.942 8.942 8.942 8.942 11.1 Γ Γ Γ Γ Γ 1164 10 10 0.00 0.00 0.00 0.00 S sharaded Γ Γ Γ 112 8.942 8.942 8.942 8.942 8.942 11.1 S S sharaded Γ Γ 114 10 10 10.00 10.00 10.00 10.00 S sharaded Γ Γ 11.1 10 8.942 8.942 8.942 8.942 8.942 S sharaded Γ 10 0.164 10 10.00 10.00 10.00 10.00 S sharaded Γ 1.1 1.1 1.0 1.1 1.1 1.1 S $NPSH$ S $1.1.16$ 10.01 10.00 10.00 1.00 10.00 S $NPSH$ S $1.1.166$ 10.01 10.0164 10.0164 10.0164 10.0164 10.0164 $NPSH$ S $NPSH$ S $NPSH$ S $1.1.166$ $1.1.166$ $1.1.166$ $1.1.1666$ $1.1.1666$ $1.1.16666$	pgje dia			0.718	· · · · · · · · · · · · · · · · · · ·	4			•		
Proprioritient fItend loss $h((m)$ 0.336 $h=m of hf(Flexible pipe)0.4420.342s.942$	in t ai			00 8	8 00	0.00	0.00	0.00	0.00	0.00	Flexible hase
Icaul loss $hf(m)$ 0.336 c f(Ticavible pipe) 0.442 c $reat ot hC(Ticavible pipe)108s.942s.942s.942s.942s.94213.J) Atmospheric Presserm8.942s.942s.942s.942s.942s.94213.J) Atmospheric Presserm0.143108s.94213.13.StatuatedTemperaturen0.164nomeastrementnomeastrementnomeastrementnomeastrementnomeastrementnomeastrementnomeastrementnos.942$										•	Part of flexible hose
f (Flocible pipe) 0.442 Nertof h C (Flocible pipe) 108 8.942 8.942 8.942 8.942 8.942 11.1 4) Atmospheric Presser m 8.942 8.942 8.942 8.942 8.942 11.1 5) Saturated Temperature "c 14 no measurement no						•		-		•	c= 130
(Flexible pipe)108			f (Flexible pipe)		in the second	and the second se			:	1	Part of flexible boxe
m 8.942 8.94 9.0 9.1 m 1.776 Not applicable 0.247 0.247 0.247 Not applicable Not applicable 1.0 1.0 1 m		•			•	E C		-			171 1 2/21
Ince° c14no measurementno measurementnonn <td< td=""><th>=</th><td>Association</td><td></td><td></td><td>8.942</td><td>·</td><td>8,942</td><td>8,942</td><td>8,942</td><td>8,744</td><td></td></td<>	=	Association			8.942	·	8,942	8,942	8,942	8,744	
 Icard head Incad head	,	white and a set of the		14	homensurement	i—	 	no measurement			
Incad Image: Image of the i		Saturated	l'emperature			_		•	•	_ 1	
S 1,461 Not applicable Not app	n yakata	vapor head		0.164					Not undividual	Not applicable	
NPS1 [(rq) [*]] m. 1.776 Not applicable Not applicab	S	HSdN	S	1971	Not applicable	Not applicable	Not applicable	Not apprecate		New conductivity	
NFNI (av) ² m 2.023 Balance Balance 0.247 Cost Cost 1. content of 100 rate C=130.				1.776	Not applicable	Not applicable	Not upplicable	Not applicable	monmindde 10N	- INDER BURNER	
Radance 0.247 Cost 7.6 Cost 7.6	ut-11-5			2.023				•	•	•	CATarroin Issue
Cost				0.247		•		•	•	•	3 - 1 - 2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
	F	120	and the second	76		a substantia a s	2 4 2 2 2	•			
				1 1 V is and when the	of analying coeffic	cient of flow rate.	C=130.	:	-		

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Hend Requirement
4) *2 Net Positive Suction Head Available

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Date :	7/15/95								
		1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Kemark
		Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water I	River water level at Chang Chhu	01,8611	197.56					•	
ł	Unit of Pump	1 unit	1 unit	No unit	No unit	No unit	No unit	No unit	ene Southof
	Pump No.	No.1	No. I	Not set	Not set	Not set	Not set	Not set	
	Position No.	P3	E3	Not set	Not set	Not set	Not set	Not set	
	Pump center level	1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
	Time (min)	101	1.02	5		•			1
	Discharge m/min/unit	•	2.498	0.000	0.000	0.000	0.000	0,000	1
	Ratio		133%	% 0	%()	0%	% ()	()%	1.88 m'/mm/unit
	Recorded head suction-side	: 		00'0	0.00	0,00	00'0	0,00	liv pressure gage
3) loss	Suction head his		1.19						
	Punp		0.131	•				•	Part of mild steel
	Bend loss	0,664	0.799	•	•		•	• • •	Ikend part of frexphe
	Pipe length	0.00	6.00	0.00	00'0	0.00	0.00	0.00	Flexible lance
- 1	[][end loss hf (m)) 0.738	1.2%2	•		1			Part of thesible luse
	E)		3.729			•			c= 130
	C (Flexible pipe)	pipe) Not applicable	15		•	•			
4) Atmospheric Presser	c Presser m	8.942	8.942	8.942	8.942	8.942	8.942	8.942	FL. 1200
5) Saturated	Temperature °c	14	4	no measurement	no measurement	no measurement	no measurement	no measurement	
vapor head head	l head m	0.164		and the second sec		•	4		
HSdN (9	S	1303	1412	Not applicable	Not applicable	Not applicable	Not upplicable	Not applicable	
- - - -	m	2.248	1.925	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	ар (2006) - - - - - - - - - - - - - - - - - - -
		m 5,250	4,094	•		•	ì	1	8 0,
:	Balance	3 002	2.170	•		-	• •	•	(Margin head)
7) Cost	kw/m ³	3 and 2 2 3 a 2 3	-0.8			-	•	•	

1) Coefficient of head loss (f) is calueutated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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7) Cost

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(Margin head) 1.88 m/mm/un tend part of frexible 'art of flexible base Part of flexible hose Part of mild steel By pressure Bage El., 1200 Plexible have . 130 130 Remark 1.0 m no measurement Not applicable Not applicable 7th operation Not operated 8.942 Not set Not set びょうえ No unit 00.0 0,000 0.00 540 no measurement Not upplicable Not applicable 6th operation Not operated Not set 8.942 No-unit-Not set 0.000 0,00 Not set 00.00 %() no measurement | no measurement | no measurement Not applicable Not applicable Sth operation Not operated No unit Not set Not set Nol set 8.942 0.000 00'0 0.00 %0 Not applicable Not applicable Not operated 4th operation 8.942 No unit Not set Not set ļ Not set 0.000 00.0 No. of Street, or other 0.00 %() , 1) Coefficient of hend loss (f) is calueulated applying coefficient of flow rate C=130. Not applicable Not applicable 3rd operation Not operated 8.942 No unit Not set Not set 000.0 Not set 00.0 00.0 80 no measurement Not applicable Not applicable 2nd operation Not operated 8.942 No unit. Not set Not set Not set 0.000.0 0.00 0.00 .1%() 1st operation 2.062 3.876 1.814 201.0 1.362 Operated 198.75 8.942 1197.40 0.139 0.850 1.262 165.5 <u></u> 0.0 2.578 6.00 \$42 4 unit 0:53 3.60 No. 35 ŝ Ξ (Flexible pipe) (Flexible pipe) lis m?/min/unit Recorded head suction-side kw/m² loss hf (m) Ratio loss Ξ 2 Я Ħ 1) River water level at Chang Chhu Pump center level NixII(rq)* NPSH(av)** Unit of Pump Position No. Time (min) Temperature Discharge Suction head Balance Pipe length 3017117 Pump No. lend loss 4) Atmospheric Presser dumd Bend held vapor head Operated 5) Saturated HSAN (9 7) Cost Date: 3) loss ลิ

2). Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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	Kemark									1.88 m'/min/unit	By pressure gage		l'art of mild steel	Bond part of frexible	Flexible hose	Part of flexible hose	c= 130	Part of Bexible hose	EL. 1200				1	1.4 m	(Alargin head)	
	7th operation	Not operated		No unit	Not set	Not set	Not set	•	0,000	0%	00'0		- - -	•	00'0	•	•	-	8.942	no measurement		Not applicable	Not applicable	ł	•	•
	6th operation	Not operated		No unit	Not set	Not set	Not set		0.000	()%	0.00	i		•	00'0	•	•	•	8.942	no measurement	1	Not applicable	Not applicable	•	•	•
	5th operation	Not operated	•	No unit	Not set	Not set	Not set		0,000	ا%/	0.00	•	۲ ۲ ۲ ۲ ۲		0.00				8.942	no measurement		Not applicable	Not upplicable	•	-	
	4th operation	Not operated	•	No unit	Not set	Not set	Not set		0,000	%()	00'0	•		•	0.00				8.942	no measurement		Not applicable	Not applicable	•	1	
	3rd operation	Not operated		No unit	Not set	Not set	Not set		0.000	%()	0.00		E .		0.00				8.942	no measurement		Not applicable	Not applicable	•		
	2nd operation	Operated	05.7911	l unt	No.cl	14	1200-58	1.01	2.467	131%	5.00	3.28	0,128	0.779	6.00	0,816	2.155	5	8.942	1 .	0.174	1420	P08.1	2.492	0.598	
	1st operation	Operated	9872611	1 unit	No.1	14	1200.58	0:56	2.558	136%	5,00	3 22	0.137	0,837	6.00	0.809	1.929	67	8.942		0,174	1372 -	2.032	2,471	0,439	6.0 m
			g Chhu	dı			a' level	· · · · · · · · · · · · · · · · · · ·	m ² /min/unit	Ratio	Recorded head suction-side	łk	loss	loss		hf (m)	(Flexible pipe)	(Flexible pipe)	W		n		R .	a a		kw/m ^x
26/81/2			River water level at Chang Chhu	Unit of Pump	Pump No.	Position No.	Pump center level	Time (mm)	Discharge)	Recorded hea	Suction head	Punp	Bend	Pipe length	Flend loss	5 -	U	c Presser	[Comperature	I head	30 20	NPSII(rq)	NPSII(av)	Balance	
Date :	And the second sec	-	1) River water	2) Operated	•	:						3) loss				· · ·			4) Atmospheric Presser	5) Suturated	vapor head head	() NPSH				7) Cost

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss ('lif').

3) *1 Net Positive Suction Head Requirement 4) *2 Net Positive Suction Head Available

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(Margin head) 1.88 m'/min/unit and part of frexible Part of flexible hose Part of the link hose art of mild steel by pressure gage EL. 1200 Jexible hose Remark c= 130 1.0 m no measurement Not applicable Not applicable 7th operation Not operated 0% Not set Not set No unit Not set 0(00)0 8.942 00'0 000 no mensurement Not applicable. Not applicable 6th operation Not operated No unit Not set Not set 8.942 Not set 0.000 %0 00.0 0.00 no measurement Not applicable Not applicable 5th operation Not operated No unit Not set Not set Not set 8,942 0,000 0,00 00.0 %0 no measurement Not applicable 4th operation Not applicable Not operated No tunit Not set 8.942 Not set Not set 00010 00.00 00'0 %0 no measurement 3rd operation Not applicable Not upplicable Not operated Not set Not set Not set 8.942 No unit 0.00.0 0.00 00.00 ×0. 2nd operation 199.59 Operated 1197.30 3.007 L.156 4.079 8.942 1438 1.851 2.441 130% 0.762 1.30 4 0 10 10 0.126 6:00 No.1 0.46 9.X 1 unit 4.50 2.29 \$ Ń 1st operation Operated 199.59 2.036 2.979 0.942 1197.50 14 0.164 127% 0.138 3.976 8.942 1372 6.00.5 .427 2.567 0.843 1 2.09 l unit 10.1 4.50 No.1 ŝ E (Flexible pipe) (Flexible pipe) m"/min/unit Recorded head suction-side hi (m) kw/m' Ratio loss loss Ë ာ Ξ Ξ Ξ A 1) River water level at Chang Chhu Pump center level i Unit of Pump Position No. Time (mm) NPSI I(uv)*2 Suction head Pump Temperature NPSH(rq) Discharge 26/61/17 Balance Pump No. Pipe length lend loss υ 3 4) Atmospheric Presser Bend head vapor head Operated 5) Saturated HSdN Date: 7) Cost 3) loss ତ ล

3) *1 Net Positive Suction Hend Requirement

4) *2 Net Positive Suction Head Available

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

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Remark

th operation Not operated

Not set Not set

No unit

Date : 7/21/95

			1st operation	2nd operation	2nd operation 3rd operation 4th operation 5th operation	4th operation	5th operation	6th operation 7t	2
			Operated	Cherated	Not operated	Not operated	Not operated	Not operated	_
1) River w	vater le	1) River water level at Chang Chhu	1197.54	92-2611				5	
2) Open	ated	2) Operated Unit of Pump	t unit	t unit	No unit	No unit	No unit	No unit.	;
	<u></u>	Pump No.	No. I	No.1	Not set	Not set	Not set	Not set	
	<u>*··</u>	Position No.	12	P2	Not set	Not set.	Not set	Not set	}]
		Pump center level	1199.59	1199.59	Not set	Not set	Not set	Not set	}
	÷	Time (min)	1:00	0:59		•		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
بر د ه		Discharge m'/min/unit	2.513	2.613.	0,000	0000	0.000	0000	
		Ratio	134%	%6£1.	()%	0%0	0%	0%	

1.88 m'/min/unit

0.000

By pressure gage

0.00 0.00

00.0

0.00

0.00

00'0

Bend part of frexible

Part of mild steel.

bur of flexible hore

c= 130

Flexible hose

00.0

0.00

00.00

00.0

0.00

8,00

1.252

hf (m)--

Pipe length

0.873

0.143

0.133 0.808 8.00 1.508 4.201

N 10

Pump

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Suction head

3) Loss

2.23

4.50

Recorded head suction-side

4.50

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Part of flexible brse

HL. 1200

8.942

8.942

8.942

8.942

8.942

8.942

8.942

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4) Atmospheric Presser

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SS

(Flexible pipe) (Flexible pipe)

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no incasurencin

)uouuoinseout ou

no measurement

no measurement

no measurement

1010

0.164

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Temperature

5) - Saturated

E.

vapor head head

- 14

Not applicable Not applicable

Not applicable Not applicable

Not applicable Not applicable

2.968

2.991

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NPSH (av)"

Bulance

E

NPS11(rq)*¹

v.

HSAN (9

0.861

7.6

1.7

kw/m²

7) Cost

2.107

1.947

1350

1404

Not applicable Not applicable

Not applicable Not applicable

> 1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement
 4) *2 Net Positive Suction Head Available

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(Margin head)

1.0 m

OperatedNot operatedNot operatedNot operatedNot operated1197.301197.30Not wetNot wetNot wetNot wet1197.301001Not wetNot wetNot wetNot wet1030.01Not wetNot wetNot wetNot wet1198.75Not wetNot wetNot wetNot wet1198.75Not wet0.0000.0000.00025330.0000.0000.0000.000130%0.000.000.000.001450.1370.000.000.001450.1370.000.000.001450.1370.000.000.001450.1380.000.000.001450.1370.000.000.001450.1380.000.000.001450.1370.000.000.001450.1370.000.000.001450.1370.000.000.001450.1370.000.000.001450.1370.000.000.001581580.000.000.00158 <th></th> <th></th> <th>1st overation</th> <th>2nd operation</th> <th>3rd operation</th> <th>4th operation</th> <th>5th operation</th> <th>6th operation</th> <th>7th operation</th> <th>Remark</th>			1st overation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
Curranter level 1177-33 1177-33 1177-33 1177-33 1177-33 1177-33 1177-33 1177-33 1177-33 1177-33 Nounit	•		()nertated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Change Change	1107 52	1197.30		-		•		
Control Unit of Numy Not Not set <	ver water	level at chang china		11	No unit	No unit	No untit	No unit	No unit	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Dperated	Unit of Pump			Not set	Not set	Not set	Not set	Not set	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	•	Pump No.	No.			Not set	Not set	Not set	Not set	
Pumposet Lord 1193/75 Not set		Position No.	ЪЗ		NOT NOT			No.	Not set	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Pump center level	11.98.75	1198.75	Not set	Not set	Not set	NOI SCI		•
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Time (min)	1:00	0:59		•	•			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			2,42	2.553	0.000	0.000	0.000	0.000	0.0(X)	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			70%	1 3/1 1/2	0%	()%	0%0	%0	0%	1.88. m/min/unit
Recorded heat startnerstore 123 145 Runn 123 0.173 0.173 0.173 0.173 0.174 Runn Dam Dam Dam Dam Dam Dam Dam Rection lead loss 0.173 0.834 0.00 0.00 0.00 0.00 0.00 Read (Tacibik princ) 1.138 0.732 8.00 0.00		Katio	a 007 -	3.201	0.00	0.00	00'0	0.00	00.0	By pressure gage
Sunction head Is 1.23 1.45 1.45 Part of mage of the second billing in the second billing		Recorded head suction-side	· · · · · · · · · · · · · · · · · · ·		;		1	t t	L	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	SSS		1.23	1.45	1		-		-	Part of mild steel
Dend Dend Description 0.715 0.834 0.00 $0.$			611.0	0.137	• -	•				the second of these blocks
Description $x(m)$ 1 1			0.715	0.834	•	•		4	•	
Pipe laugh $M/(m)$ 1.138 0.782 $M/(m)$ 1.138 0.782 $M/(m)$ $M/(m)$ $M/(m)$ $M/(m)$ f g </td <td></td> <td></td> <td></td> <td>W A</td> <td>0 ()()</td> <td>0.00</td> <td>0.00</td> <td>00.0</td> <td>0.00</td> <td>l'lexible hune</td>				W A	0 ()()	0.00	0.00	00.0	0.00	l'lexible hune
Icaul loss $M(m)$ 1.138 0.732 0.732 m c T $(Tacai) he pipe)M(m)1.1380.732RQCT(Tacai) he pipe)G79RQCT(Tacai) he pipe)GTT<$		Pipe length	8.00	0.00		•				Part of Bexible hove
rr(Flexible pipe) 3.415 1.585 9.42 8.942 8.942 1.534 c(1)(2)(1)(3) 79 8.942 8.942 8.942 $1.1.1$ diff(1)(2)(1)(3) 8.942 8.942 8.942 8.942 $1.1.1$ diff(1)(3)(3)(1)(4)(3)(4)(4)(4)diff(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)diade(1)(1)(1			1.138	0.782	•	1			:	c= 130
C(7)7979798.9428.9428.9428.9428.942111oheric Presserm8.9428.9428.9428.9428.9428.942111adTemperature"c1515no measurementno measurementno measurementno measurementadTemperature"c150.1740.174Not applicableNot applicable <t< td=""><td></td><td>r (Flevible pipe)</td><td></td><td>1.585</td><td>· · · · · · · · · · · · · · · · · · ·</td><td>1</td><td></td><td>•</td><td></td><td>Part of Thewible bose</td></t<>		r (Flevible pipe)		1.585	· · · · · · · · · · · · · · · · · · ·	1		•		Part of Thewible bose
photetic Presserm 8.942 <td></td> <td>1.</td> <td></td> <td>۶<u>۳</u></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td>17761 121</td>		1.		۶ <u>۳</u>		-				17761 121
$ \frac{d}{1 \text{ temperature}} \frac{1}{2} 1$	ollosonti			8,942	8.942	8.942	8.942	8.942		1.11. 12.00
head m 0.174 0.174. Not applicable Not applicable<		oture	15	<u>.</u>	no measurement		no measurement	no measurement		
Iteration Income 1468 1383 Not applicable Not applicable <td>unuur eese he</td> <td></td> <td>0.174</td> <td>0.174</td> <td></td> <td></td> <td>4</td> <td></td> <td>•</td> <td></td>	unuur eese he		0.174	0.174			4		•	
NPSUI(rut) ⁻¹ m 1.762 2.008 Not applicable Not app	vapor in		1468	1383	Not applicable		Not applicable	Not applicable	Not upplicable	
10 MrSH(ray) m 4.314 4.272 1.0 NPSE(ray) m 2.552 2.264 1.0 Balance kw/m' 7.6 7.8 2.564 1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130 1.0 1.0 1.0 2) Coefficient of flow rate (C) is calculated applying head loss (hf). 3.1 Net Positive Suction Head Requirement 3) *1 Net Positive Suction Head Available 3.1 1.0 1.0			1 762	2.008	Not applicable	: 	Not applicable	Not applicable	Not applicable	
NPSN((av) m 2.552 2.264 Balance kw/m' 7.6 7.8 1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130 . . 2) Coefficient of Row rate (·C) is calculated applying head loss (hf). . . 3) *1 Net Positive Suction Head Available . .			207.1		3			•	• •	1.0 m
			T T				•	•	•	(Margin he
	:			7.2(14						a second s
		and the second s		7.8	and the second					
 2) Coefficient of flow rate (-C.) is calculated applying head loss (hf). 3) *1 Net Positive Suction Head Available 		1) Coefficient of head loss	(f) is caluculate	if applying coefficient	cient of flow rate	C=130	•			
3) *1 Net Positive Suction Head Requirement		2) Coefficient of flow rate	(-C.) is calculated	d applying head k	oss (hf).			;		
A structure Survive Surviv		2) +1 Not Positive Suction	Head Requireme	M.					· ·	
		1) I Not Desitive Suction	Hend Available							

Analysis Operation Monitoring Data - Alto 1991 - 11

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Date :	7/24/95	a second and a second					-			
			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water 1	River water level at Chang Chhu	ılıu	1197.12			•	r		•	
2) Operated	Unit of Pump		linu 1	1 mul	No unit	· · · ·				
	Punp No.		No.1	No.1	Not set					
- - - - -	Position No.		ld		Not set					
	Pump center level	el el	1200.58	1200.58	- Not set	Not set	Not set	Not set	Not xct	-
	Time (min)		0.54	0:59		•			•	
	· ·	m ³ /min/unit	2.630	2.386	0,000	0.000	0.000	000'0	0.000	
		Ratio	140%	%121	%0	%0	()%	0%0	%()	1.88 m/min/mit
	Recorded head suction-side.	tion-side	5.20	5.20	00'0	0.00	0.00	0.00	0.00	By pressure gage
3) loss	Suction head	hs	3,46	3.58		•			•	
	Pump	loss	0,144	0.121				1		Part of mild steel
	lsend.	8	0 885	0 728	•		•	1,	•	Bend part of treathle
	Pipe length		8.00	8,00	00.0	0.00	0.00	0.00	0.00	Flexible hose
	11cud loss	hť (m)	0.714	0 774				•	1	Part of the vible have
	L (Fi	(Flexible pipe)	1.219	1.925		•		1		c= 130
	C (Fk	(Flexible pipe)	%	75				E C	1	l'art of flexible hose
4) Atmospheric Presser	c Presser	m	8.942	8.942	8.942	8.942	8.942	8.942	8.942	131., 1200
5) Saturated	Temperature	°c C	14	1	no measurement					
vapor head head	l head	æ	0.164	0 164			•		•	
6) NPSH	8		1340.	1-16-1-	Not applicable	500 (
	NPSH(rq).	ម	2.136	1 784	Not applicable					
	NPSH(av)**	ä	2,264	2.319	•	•	•	•	1	4 97
	Baltance		0.128	0.535		1	•	-	•	(Margin bead)
7) Cost		kw/m²	6.8	7.6	•			•		

 kw/m²
 6.8
 7.6

 1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

Coefficient of flow rate (C) is calculated applying head loss (laf).
 *1 Net Positive Suction Head Requirement

+) *2 Net Positive Suction Head Available

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Analysis Operation Monitoring Data A second s

ä	Date :	7/25/95							•	
			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	/th operation	Kenark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
	iver summer le	Discriminated and Change Clinks	90/2611	06 96 11	•	•	1	•	•	
	Orcented	Unit of Pump	1 unit	a mitai	No unit	No unit	No unit	No unit	No unit	
		Punn No.	No.1	No.1	Not set	Not set	Not set	Not set	Not set	
		Docition No	53	P3	Not set	Not set	Not set	Not set	Not set	
	•	Dimine router level	1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	\$
		Time (min)	0:59	0:59					• :	
		Discharge m/min/unit	2.436	2:545	0.000	0.000	000 0	0000	0.000	· . · .
<u>.</u>		• •	130%	135%	%0	0%	()%	%0	9%()	1.88 m'/min/unit
		Recorded head suction-side	3.50	3.50	0070	00.0	0.00	0.00	0.00	By pressure gage
31 1056		Suction head hs	69.1	1.85		1			•	
: ;			0.125	0.136				1	•	Part of mild stoci
			0.759	0.828		9	•	1	•	Bend part of frexible
		is a second	6.00		0.00	0.00	0.00	0,00	0.00	Fiexible base
			0.928	0.688		a server and the server of the		•	1	Part of flexible hove
			177 C	-976		•		•	•	c= 130
		1 (Plexible pipe)		73				•	-	Part of flexible here
	Atmospheric Presser		8.942		8,942	8.942	8.942	8.942	8.942	1:1., 1200
			2	14	no mensurantem	no measurement	no measurement	no measurement	no measurement	
s S	Saturated	cruttre	0.152	0 164				· · · · · · · · · · · · · · · · · · ·	•	
	vapor nead Incad		- 1470	1251	Not amplicable	Not applicable	Not applicable	Not applicable	Not applicable	
<u> </u>	() NPSH					Not applying	Not smolicable	Not applicable	Not applicable	
		NPSI(rq)*	1.848		Not appricante	- INOT approximation				1.0 m
cashika		NFSH(av)*2 m	4.018	3.984	•		•	•	-	A thread hereits hereits
00000000	•	Balance	2.170	1.980					,	
7) Cost	Cost	kw/m ³		and the second second			•	•	,	
		1) Coefficient of head loss (f) is caluculated applying	(f) is caluculated		coefficient of flow rate C=130.)=130.				

2) Coefficient of flow rate (C) is calculated applying head loss (hf). 3) *1 Net Positive Suction Head Requirement4) *2 Net Positive Suction Head Available

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Date : 7/26/95

C/ 107 11	1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
1	Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	· · · · · · · · · · · · · · · · · · ·
£	00 2611	98 96 11				- Albert Hander	t	
1	and the second territory	ł wit	No unit	No unit	No unit	No unit	No unit	
1	No.1	No.1	Not set	Not set	Not set	Not set	Not set	-
1.1	52	13	Not set	Not set	Not set	Not set	Not set	
<u>i</u> -	1199.59	1199.59	Not set	Not set	Not set	Not set	Not xet	
\$ C.	0.58	0:58					\$	
m/mm/unit	2.472	2.453	0.000.0	0.000	0,000	0.000	000.0	
Ratio	132%	13(1)%	240	%()	()%	()%	0%	1 %8 m'/mim/unit
Recorded head suction-side	4.50	4.50	0.00	0,00	0.00	0.00	00.0	By pressure gage
hs	2.59	2.73	•			•	4	
loss	0.129	0.127					1	Part of mild steel
loss	0.782	0,770	· · · · · · · · · · · · · · · · · · ·			•	1	lkend part of frexible
111	6.00	6.00	0.00	0.00	0.00	0.00	00 0	Flexible lawe
hf (m)	266.0	0.872	•				ł	Part of the sible have
- <u>'</u>	(Plexible pipe) 2.796	2.393	•			L.	•	c= 130
ΪĒ.	(Flexible pipe) 58	62			ŧ	•	-	Part of the vible hove
E	8.942	8.942	8.942	8,942	8.942	8.942	8.942	131, 1200
دع	14	1	no measurement	ทอ เกษอรเมาะเกร	no measurement	ุนเอนเองกระธาน ou	no measurement	
E	0.164	0,164		tion and the second s			L 2	· · · · · · · · · · · · · · · · · · ·
	1420	1429	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	1,897	1,872	Not applicable	Not applicable	Not upplicable	Not applicable	Not applicable	
i !	3,000	3.005		ŧ	1	1	I	1.0 m
	1.104	1.133		,	•	•	1999 - P.	(Margin head)
kw/m ³	5.7	23	•	•	•	•	•	
•								

1) Coefficient of head loss (f.) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Hend Available

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	Date :	7/27/95								
L			Tst operation	2nd operation	3rd operation	4th operation	5th operation	ota operanon	/tn operation	NCINARY
	Arthur 1 s		Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1	1) River water	River water level at Chang Chlu and the	1196.96	1196,79.			1			
1.	1.	Unit of Punp	l unit	1 unit	No unit	No unit	No unit	No unit.	No unit	
		Pump Ne	No.1	No.1	Not set	Not set	Not set	Not set	Not set	
		Position No.	14	i c	Not set	Not set	Not set	Not set	Not set	
own dam te		Pump center level	1200.58	1200.58	Not set	Not set	Not set	Not set	Not set	1
		Time (min)	0.56	1:01	4	•	•	4	• • •	• • • • • • • • • • • • • • • • • • •
		Discharge m/mm/unit	2.602	2.389	0.000	0.000	()()()	0.000	0.0XX)	5 -10-01
		: 	138%	-127%	%0	1.24	%()	0%0	9/11()	1.88 m/mm/mit
-		Recorded head suction-side	5.10	5.10	00.00	0,00	00.0	00'0	0.00	By pressure gage
-	3) loce	Stretion head	3.62	3.79				•	1	
	sent le		0.141	0.121				1	ł	Part of mild steel
			0.866	0.730					: •	I send part of frexible
			6.00	6.00	0.00	00.0	0.00	0.00	0.00	Flexible June
- 8			ATA 0	0.462		and the second sec	1			Part of flexible bose
3				1002		<pre>interaction and interaction interaction </pre>		•	•	c= 130
		r (Fiexible pipe)	cc//n	0.703			and the state of t		•	Part of flexible hese
		C (Flexible pipe)	16	· · · · · × 44	•	•	1			
	4) Atmospheric Presser	ric Pressur	8.942	8.942	8.942	8.942	8.942	8,942	8.942	0071 1.1
	5) Suturated	[Temperature "c	15	51	no measurement	no measurement	no measurement	no measurement	no measurement	
		head m	0.174	0.174			•		P 100	
	HSdN (9	.	1,350	1454	Not applicable	Not applicable	Not upplicable	Not applicable	Not applicable	
_		NPSH(ro) ⁻¹ m	2.101	1.707	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
		m	2.361	2:409			•	•	•	1.6 m
الير لي ات ا			0.260	0.612	•	• • • • •		•		(Alargor lead)
- Harrison	7) Cost	kw/m ^A	7.0	F.8				•	-	
-ł		1. According of hand lace tf Viscaluculated applying coefficient of flow rate C=130.	rf Vierchurchlater	d applying coefficient	ient of flow rate (=130		-		
		1) Cochicical of Actin 1055							-	

2) Coefficient of flow rate (C) is calculated applying head loss (lrf). 3) *1 Net Positive Suction Hend Requirement

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4) *2 Net Positive Suction Head Available

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Date : 7/28/95

Date :	7/28/95			a construction of the second of the second se	 Contract of the second sec second second sec					
i i i i i i i i i i i i i i i i i i i			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water I	River water level at Chang Chhu		1197.20				•	•	1	
2) Operated	Unit of Pump		• 1 unit	1 unit	No unit	No unit	No unit	No unit	No unit	
	Pump No.		No.1	No.1	Not set	Not set	Not set	Not set	Not set	
	Position No.		P3	53	Not set	Not set	Not set	Not set	Not set	
	Pump center level		1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
	Time (min)		0:59	0:58	1		4		- - - - - - - - - - - - - - - - - - -	
		m/mm/mit	2.380	2.457	0,000	0.000	0.000	0.000	0.000	
		Ratio	127%	131%	۰%۵)	0%0	%()	%()	0%	1.88 m/min/unit
	Recorded head suction-side	m-side	3.50	3.50	0.00	0.00	0.00	00.0	00'0	By pressure gage
3) loss	Suction head	lis	1.55	1,85.						
	Pump	loss	-0.120	0,127	•		1	•	• !	Part of mild steel
	Bend	loss	0.724	0.772	•			•		Bend part of frexible
	Pipe length		4.00	4 (X)	0 00	0.00	0.00	0.00	0.00	Plexible hose
	Tlend loss M	hí (m)	1.108	0.753				•	4 4 4	Part of flexible house
	f (Flexit	(Flexible pipe)	3.774	2.214					, , ,	c= 130
•	C (Flexil	(Flexible pipe)	42	54		•			ŀ	Part of flexible base
4) Atmospheric Presser		E I	8.942	8.942	8.942	8.942	8.942	8 942	8.942	1:11200
5) Suturated	Temperature	°c	15	15	no measurement	no measurement	no measurement	no measurement	no measurement	
vapor head head		m	0.174	0.174		•	•	•	•	
6) NPSH	S		1461	1429	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	NPSH(rc)	a	1.781	1.874	Not upplicable	Not applicable	Not applicable	Not applicable	Not applicable	
	NPSI l(av)*2	a	4,011	3.994	1	1		ţ.	•	
	Bulance		2.230	2.120	•		•		•	(Margin head)
7) Cost		kw/m ² ===	92	7 L			•	•		
							Í			

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1) Coefficient of head loss (1) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (lif).

*1 Net Positive Suction Head Requirement
 *2 Net Positive Suction Head Available

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(J)

	Date :	20/05/17							•	
Ļ			Lst operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Kenark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
	1) Directorie	Direction for at Chang Chin	- 1196.90	1196.00			•	1	•	
1	1	This of Permit	1 unit	Jim Jim	No unit	No unit	No unit	No unit	No unit	
-		Durwei Lung	No.1	No.1	Not set	Not set	Not set	Not set	Not set	
		Position No	24	12	Not set	Not set	Not set	Not set	Not set	ę 3
		Panny renter level	1199.59	1199.59-	Not set	Not set	Not set	Not set	Not set	• • • • •
		Time (mm)	0.54	0:57						
		Discharge m/min/unit	2.672	2,422	0.000	0000	0.000	0-000	0.000	
			142%	129%	%0	0%	%0	%()	%0	1.88 m'/min/unit
1		Recorded head suction-side	4.50	4-50	0.00	00.0	0.00	0.00	0.00	Dy pressure gage
	21 Jaco	Condition Internet	2.69	3.59			•		4	
-			0 149	0.124		1 1			ł	Part of mild stoel
			0.913	0.750				a a a a a a a a a a a a a a a a a a a		Bend part of frexible
١			4 00	4.(X)	0,00	0.00	0,00	0())	0.00	Flexible here
R - 1			0.746	0.034			• · · · · · · · · · · · · · · · · · · ·		1	Part of the vibbe hose
85			1 3	A 407			•	•	4	c= 130
400 - 1			:	230				•	•	Part of the link lawe
	Ł	C (Fickinic pipe)		C 40 X	8.942	8.942	8.942	8.942	8.942	1:1., 12:00
	4) Atmospheric Fresser		717.0					Internet and a second second	Insuransista on	
L.,	5) Saturated	l'temperature "c	-15	15	no measurement	no measurement	no measurement			
	vapor head haid	had	0.174	0.174	•				May most with the	
<u>د ا</u>	HSAN (9)	S	1,303	1446	Not upplicable	Not applicable	Not applicable	Not applicante	Northered	
		NPSI I(rq)*1	2.241	1.826	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	14 - 6 -
		u (AF)IISdN	2.944	3.002	•	F	1	,	•	2 B
			0.703	521,1				•	•	(Margin head)
- بليد	7) Cost	kw/m ³	10.00 million and a second	7.3	•	•	•	•	-	
	- 1 -	1) C - Or in the set of the columnitated applying coefficient of flow rate C=130	/ f \ is colucidate	d anniving coeffici	ient of flow rate	C=130			•	
1				annivine licad los	head loss (hf)				:	÷
		2) Coefficient of 110W rate	ううき うっこう うって ノン						:	

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2) Coefficient of flow rate (C) is calculated applyi
3) *1 Net Positive Suction Head Requirement

1) *2 Net Positive Suction Hend Available

Date :	8/1/95					And subject of	а		_	
			1st operation	2nd operation	3rd operation	4th operation	Sth operation	6th operation	7th operation	Remark
		1	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water	River water level at Chang Chhu	Chhu	1197.52	and the second						
2) Operated	Unit of Pump		1 unit	No unit	Noumit	No unit	No unit	No unit	No unit	
	Pump No.		No.1	Not set	Not set	Not set	Not set	Not set	Not set	
	Position No.		23	Not set	Not set	Not set	Not set	Not set	Not set	
	Pump center level	svel	1198.75	Not set	Not set	Not set	Not set	Not set	Not set	
	Time (min)		0:53		•					
	Discharge	m?min/unit	2,608	0,0,0	0000	0.000	0(0)	0000	0,000	
]	Ratio	139%	0%	%0	%()	%()	%()	•%0	1.88 m'/mm/unit
	Recorded head Suctionside	suctionside	3.00	00'0	0,00	0.00	0.00	0,00	00'0	By pressure gage
3) loss	Suction head	ls	1.23						•	
	Pump	loss	0.142			1		1	1	Part of mild steel
	Bend	lows	0.870							Bend part of frexible
	Pipe length		2.00	6.00	0.00	0.00	0.00	0.00	0.00	Flexible hase
	I lead loss	hť (m)	0.760				4		. 1	Part of flexible boxe
	F (F	(Flexible pipe)	2.199		* * * * * * * * * * * * * * * * * * *		1	1		c= 130
	C (F	(Flexible pipe)	39				•		•	Part of flexible hose
4) Atmospheric Presser	c Presser	ш	8.942	8.942	8.942	8.942	8.942	8.942	8.942	FJ., 1200
5) Saturated	Temperature	, S	15	no measurement	no measurement	no mcusurement	no measurement	no measurement	no measurement	
vapor head head	l head	æ	0 174						•	
HSAN (9	s S		05£1	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
	NPSH(rq).	E	2.104	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	-
	NPSH(av)*2	E	4.459		•			,	4	1.0 m
	Balance	-	2.355	•	-			•	•	(Margin head)
7) Consumed power	xowcr	kw/m ³	6.9			•	1	ŕ	•	
	1) Coefficient c	of head loss (() is coluculated	 Coefficient of head loss (1) is caluculated applying coefficient of flow rate C=130 	ant of flow rate C	=130.				

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Hend Available

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Analysis Operation Monitoring Data

Date : 8/5/95

	27 12710									
			1st operation	2nd operation	3rd operation	4th operation	Sth operation	6th operation	7th operation	Remark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
cr water I	River water level at Chang Chhu	ig Chhu	07 9611	1196.10		•	•		1	
Operated	Unit of Pump	du	1 unit	l umit	No unit	No unit	No unit	No unit	No unit	
	Pump No.		No.1	No.1	Not set	Not set	Not set	Not set	Not set	
	Position No.		2	2	Not set	Not set	Not set	Not set	Not set	
	Pump center level	r level	1199.59	1199.59	Not set	Not set	Not set	Not set	Not set	
	Time (min)	· · · · · · · · · · · · · · · · · · ·	0.54	0:54				landa and a second seco		
	Discharge	m ³ /mm/unit	2.578	2.554	000.0	0.000	0,000	0,000	0.000	
	* .	Ratio	137%	136%	%()	······································	0%0	0.00	%0	1.88 m/min/unit
	Recorded hea	Recorded head Suctionside	4,80	5,00	00.00	0.00	0.00	0.00	0.00	By pressure gage
3) !oss	Suction head	hs	3.19	3.49						
	cumd	loss	0.139	0.137					· · · · · · · · · · · · · · · · · · ·	Part of mild steel
	Bend	loss	0.850	0.834						I kind part of frexuble
	Pipe length		8.00	8.00	00.0	0,00	0.00	0.00	0.00	Flexible hose
	Head loss	hf (m)	0.619	0.537						Part of the side hove
	\$	(Flexible pipe)	0 994	0.755					•	c= 130
	C C	(Flexible pipe)	16	97			•		•	Part of flexible boxe
Atmospheric Presser	Presser	u	8.942	8.942	8.942	8.942	8.942	8.942	8.942	151., 12000
Saturated	Temperature	Э°.	15		no measurement	no measurement	no measurement	no measurement	no measurement	
vapor head head	head	m	0.174	0.187				•	•	
HSdN (9	S		1362	1 383	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	• • • • • • • • • • • • • • • • • • •
	NPSII(rq)*	EL.	2.062	2.(X)9	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	NPSU(av)*2	ш	2,666	2.459		ł	•	•	1	1.0 m
	Balance		0.604	0.450		•		•	·	(Margin head)
Consumed power)WCr	kw/m ³	0.8.0	1.0.2	-	alan an a	1		•	

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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36/L/8

Date:

			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
			Operated	Cyperated	Not operated	Not operated	Not operated	Not operated	Not operated	
	1) River water I	River water level at Chang Chhu	1196.20	01'96'11						
8	2) Operated	Unit of Pump	1 unit	and the second second	No unit	No unit	No unit	No unit	No unit	
		Pump No.	No.1	No.1	Not set	Not set	Not set	Not set	Not set	
		Position No.	53	5	Not set	Not set	Not set	Not set	Not set	
		Pump center level	1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
		Time (min)	0.55	0.56					4	
فين جرزها		Discharge m ³ /min/unit	2.556	2.650	0(0)	()()()	0.000	0.000	0.000	
		Ratio	136%	14.1%	0%	0%	()%	%()	0%0	1.88 m/min/unit
مسروية		Recorded head Suctionside	4.00	4.00	0.00	0.00	00'0	0'00	00'0	By pressure gage
-	3) loss	Suction head hs	2.55	2.65			1		•	
		Pump loss	0.137	0.146						Part of mild steel
		Bend lows	0.836	0.898		1			1	Bend part of frexible
R		Pipe length	4.00	4.00	00'0	000	0.00	0.00	00'0	Flexible house
- 89		[lead loss hf (m)	0.479	0.307			1		I	Part of flexible hose
		r (Flexible pipe)	1.086	0.437		Þ		Í		c= 130
Braibaitin		C (Flexible pipe)	71	94			1	1	-	f'art of flexible have
- <u>L</u>	4) Atmospheric Presser	C Presser 11.11 - march 11.	8.942	8.942	8.942	8.942	8.942	8.942	8.942	P.I., 1200)
	5) Saturated	Temperature	15	- 16	พอเมวทระวนเ ou	no incasurement	no mcasurement	no measurement	no measurement	
	vapor head head	head	0.174	0,1%7				•	£	
4	HSAN ()	8	1383	1328	Not applicable	Not applicable	Not upplicable	Not applicable	Not applicable	
, ,		NPSII(rq)*	2.010	2.174	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
		NPSH(av) ^{•2} m	3.471	3,436	1			•	ŧ	1.0 35
	· · .	Balance	19+1	1.262	1		•	•	•	(Margin head)
┹╼╼	7) Consumed power	ower and when have a second	6.4	1.7			•		li i	
-		1) Confinient of head lose (f) is calmentated applying coefficient of flow rate C=130	f) is colucial of	analyting coefficie		-1 %				

1) Coefficient of head loss (1) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement
4) *2 Net Positive Suction Head Available

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20/2/2

Analysis Operation Monitoring Data

•	Date :	8/8/95		and the second se						
			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
	River water Ic	River water level at Chang Chhu	01.7911	80'2611			•		•	
กิ	Operated	Unit of Pump	l unit	and the second s	No unit					
د مورد اجترور		Punp No.	No.1	No.1	Not set					
		Position No.	P2	12	Not set					
		Pump center level	1199.59	1199.59	Not set					
		Time (min)	0:56	0.53			•		1	
		Discharge m/min/unit	2.538	2 613	0.000	0000	0.00.0	0,000	0.000	
-		Ratio	%5£1	%6621	%()	()%	0%0	0%0	(P%	1.88 m?/min/unit
		Recorded head Suctionside	4.00	4 (X)	0.00	00.0	00:0	00.0	0.00	By pressure gage
3) loss	loss	Suction head his	2.49	2.51			ł	•	•	
		Ptunp loss	0.135	0.143		ſ				Part of mild steel
		Bend loss	0.824	0.874			•			Bend part of frexible
	_	Pipe length	4,00	4.00	0.00	0.00	0.00	0.00	0.00	Plexible hose
		[[lead loss hf (m)	0,549	0.472			4	4		Part of flexible bose
می ادر منبر م		f (Flexible pipe)	.) 1.349	0.994			Ť			c= 130
		C (Flexible pipe)	•) 66	73		1	•			Part of flexible hove
Ŷ	Atmospheric Presser	Presser	8.942	8.942	8.942	8.942	8.942	8,942	8.942	KL: 1200
5	Saturated	Temperature °c	15	81	no measurement					
	vapor head head	hend	0.174	0.212	•	•		•	1	
6	() NPSH	S	1393	1340	Not applicable	Not applicable	Not upplicable	Not applicable	Not applicable	
		NPSII(rq)*1 m	0861	2.126	Not applicable					
		NPSH(av)* ² m	3,476	3.420		•			1 "	1.0 m
		Balance	1.495	1.293	- 1	-		•	E	(Margin head)
- A	7) Consumed power	ower kw/m ³	8.3	8.2	•	-	•	1	1	
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1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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The second secon

(Nargin head) 1.88 m'/min/unit Send part of frexible hart of flexible base Part of flexible hose art of mild steel liy pressure gage. 11. 1200 Flexible hose Remark c= 130 1,0 m no measurement Not applicable Not applicable 7th operation Not operated No unit Not set Not xet Not set 8.942 0,000 00.0 %0 0.00 no measurement 6th operation Not applicable Not applicable Not operated Not set No unit Not set 8.942 Not set 0,000 00.0 0.00 %0 no measurement Not applicable 5th operation Not applicable Not operated Not set No unit Not set Not set 0.000 8.942 %0 0.00 0.00 no measurement 4th operation Not applicable Not upplicable Not operated The second se Not set No unit Not set Not set 0.00000,0 8.942 0.00 %0 no measurement **3rd operation** Not applicable Not applicable Not operated No unit Not set Not set Not set 8.942 0.000 00.00 0.00 % 2nd operation Not upplicable Not applicable Operated -05.30-0.989 1198.75 0.187 2.781 0,160 2.951 8.942 No. 48% 8.00 [.40] uni 0:52 5.00 2,45 S 91 E. Ist operation 1196.30 Operated 2.240 1198.75 1.490 2.444 0.204 0.913 8.942 0 5.00 2.45 0.149 0.174 2.672 142% S . I unit No.1 0:53 8.00 ŝ 5 (Flexible pipe) (Flexible pipe) m³/min/unit Recorded head Suctionside hf (m) Rutio loss 1055 hs. E Ξ <u>.</u>, Ξ Ξ River water level at Chang Chhu Pump center level Unit of Pump Position No. Time (min) Discharge Temperature NPSH(rq)*¹ 8/9/95 NPSII(av)*² Suction head Balance Pump No. Pipe length lead loss ٩. Q ŝ 4) Atmospheric Presser dum, Bend head vapor head Operated 5) Saturated HSdN Date: loss ତ ଳ ć ন

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

0.8

kw/m¹

Consumed power

3) *1 Net Positive Suction Head Requirement

1) *7 Not Positive Suction Head Available

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8/10/95

Date :	8/10/95									
			1st operation	2nd operation	3rd operation	4th operation	Sth operation	6th operation	7th operation	Remark
		1	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water I	River water level at Chang Chlur-	uhu -	1196,40		•	•		-		
2) Operated	Unit of Pump		1 unit	No unit	No unit	No unit	No unit	No unit	No unit	
	Pump No.		No.I	Not set	Not set	Not set	Not set	Not set	Not set	
	Position No.		P3	Not set	Not set	Not set	Not set	Not set	Not set	
	Pump center level		1198.75	Not set	Not set	Not set	Not set	Not set	Not set	• • • • • • • • • • • • • • • • • • •
	Time (min)		0:56			•	ŀ	•	•	****** : :
D-410- 874	÷	m'/mm/unit	2.559	~ .	0.000	0.000	0,000	-00070	0.000	-
	. : •	Ratio	136%	.0%	0%	%0	%0	%()	%()	1.88 m'/min/unit
	Recorded head suction-side	tion-side	4.()()	00:0	0.00	0.00	00.0	0.00	0.00	liy pressure gage
3) loss	Suction head	lis	2.35							
	Pump	loss	0.137		•		i i i i i i i i i i i i i i i i i i i		•	Part of mild steel
	Bend	loss	0.838		1		•		1	Pend part of freshle
	Pipe length		2.00	00:00	0.00	0000	00'0	0,00	() () ()	Plexible hose
	l'lend loss	hr'(m)	0.677		· · · · · · · · · · · · · · · · · · ·				1	Part of flexible hose
	(Fk	(Flexible pipe)	2.014	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			•	1	1	c= 130
	C (Fk	(Flexible pipe)	41	•				-		Part of flexible hose
4) Atmospheric Presser	c Presser	E	8.942	8.942	8,942	8.942	8.942	8.942	8.942	1:1., 1200
5) Saturated	Temperature		16	no measurement	no measurement	no measurement	no measurement	no measurement	no measurement	
vapor head	head	B	0.187	and the second				1	•	
HSAN (9	S		1372	Not applicable	Not applicable	Not applicable	Not upplicable	Not applicable	Not applicable	
	NPSII(rq).	a	2.032	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	NPSII(av)+2	E	3,458				•	,	•	E 0'I
- university	Balance		1.426			-		ан 1911 - Сан 1911 -	1	(Margin head)
7) Consumed power	xowcr	kw/m³	. 8.2	•••••	1				·•	
	1) Coefficient of	f hend loss (f) is caluculated	1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130.	ent of flow rate C	=130.				

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2) Coefficient of flow rate (C) is calculated applying head loss (hf).

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3) *1 Net Positive Suction Head Requirement 4) *2 Net Positive Suction Head Available

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(Margin-head) 1.88 m/min/unit kend part of frexible art of lickible hore Part of flexible hose ly pressure gage Part of mild steel Plexible have 131. 1200 Remark CE 130 1.0 m no measurement Not applicable Not applicable 7th operation Not operated Not set Not set Not xet No unit 8.942 0.000.0 0.00 00.0 % no measurement Not applicable Not applicable 6th operation Not operated Not set Not et No unit Not set 8.942 0.000 0.0 000 %0 no measurement Sth operation Not applicable Not applicable - Not operated No unit Not set Not set Not set 8,942. 0.000 00.0 0,00 %0 . no measurement Not upplicable Not applicable 4th operation Not operated No unit Not set Not set Not set 8.942 0.000 00:0---00'0 %0 no measurement Not applicable Not applicable 3rd operation Not operated No unit Not set Not set 8.942 0.00.0 00:0 00:0 j. %0 2nd operation 143% Operated 65.6611 No.1 1-196:40 4.50 3.19 8.00-0.234 0.336 160 2.249 2.940 12 2.687 0.923 8.942 0.174 1303 0.691 i unit 0.150. 0.5.3 ŝ lst operation 1196.50 Operated 199.59 1315 2.945 142% 0.026 8.942 0 174 I unit No.1 2.669 0.148 116.0 0.349 4.50 8.00 0:54 3.09 Z.S <u>י</u> 2 (Flexible pipe) (Flexible pipe) m³/min/unit lit'(m) --Recorded head Suctionside N:SO Ratio loss kw/m E . - II . <u>୍</u>ୟା ଜ Ē E River water level at Chang Chhu Pump center level: Unit of Pump Time (min) NPSH(rq)* Position No. Discharge Suction head Temperature Pump No. 36/11/8 ipe length Balance lead loss . Q 4) Atmospheric Presser dumd Band head Consumed power vapor head Operated 5) Saturated HSHN Date: loss ତ 5 ... 5

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1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130, 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Hend Requirement

4) *2 Net Positive Suction Head Available

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•		01 9611	5	
Not operated	Not operated	Operated	Operated Operated Not operated Not operated	
4th operation	3rd operation	2nd operation	1st operation 2nd operation 3rd operation 4th operation	
			the second s	Date : 8

		i i		and an and a set	2 and an analysis to 2	Lets verseration -	Sth anerstian	6th overation	7th operation	Remark
			IN operation	uomerado buz	or a procession	+In upor autor				
		,	Operated	Operated	- Not operated	Not operated	Not operated	Not operated	Not operated	
1) River water le	River water level at Chang Chhu		1196.20	01.9611	B			•	•	in the second
	Unit of Pump		l unit	1 unit	No unit	No unit	No unit	No unit	No unit	
	Pump No.		No.1	No.1	Not set	Not set	Not set	Not set	Not set	
	Position No		P3	P3	Not set	Not set	Not set	Not set	Not set	· · · · ·
	Pump center level		1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
	Time (min)		0:53	0.56						1
	Discharge m ³ /min/unit	n/unit	2.664	2.723	0,000	000.0	0,000	0.000	0.000	
		Rutio	142%	145%	0%	%0	٥/٥/١	. %0	0%	1.88 m/mm/unit
	Recorded head Suctionside	tside	4.50	5.00	0.00	0.00	°00°0°	0'00	0.00	lyy pressure gage
2) loce	Surfice head	1	2.55	2.65						
seen to			0.148	0 154					•	l'art of mild steel
	to and the second se	inces in the second	X06 0	0.949						Isend part of frexible
en tin de	and the second second		8 (6)	8.00	00'0	00'0	0.00	0.00	000	Flexible hose
		hi'/m)	0 806	1.249	and the second sec					Part of flexible base
		(01)	004	277.4						c= 130
		(FICNIDIC PUPC)							•	Part of flexible have
		(richiologian)	8 947	8.942		8.942	8.942	8.942	8.942	1:1., 1200
+) Autospacia riesser							┶		In monormour	
5) Saturated	Temperature	°c		15	no measurement	no mensurement	no measurensen			1
vapor head head		E	0.174	0.174	and the second se	•	1		•	
6) NPSH	\$		1315	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	NPSH(ru)*	a	2.209	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not upplicable	1 1 1 2
		a	2.946			•		· ·	ł	
		1	0.737				•	·		(Margin Ixead)
The Concerned of		Luthin I	72			•	•			
1) Consumed power										

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Hend Requirement

4) *2 Net Positive Suction Head Available

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(Margin head) 1.88 m\/min/unit and part of frexible Part of Benible bose Part of the sible base Part of mild steel By pressure gage Fil. 1200 c= 130 Plexible hose Remark 1.0 m no measurement Not applicable Not applicable 7th operation Not operated No unit Not set 8.942 Not set Not set 0.000 00.0 0.0 %0 i no measurement Not applicable Not applicable. 6th operation Not operated No unit Not set 8.942 Not set Not set 0.000.0 0%0 0.00 00.0 no measurement Not applicable Not applicable 5th operation Not operated Not set Not set Not set 8.942 No unit 0.000 0.00 0,00 %0 no measurement Not applicable Not applicable 4th operation Not operated Not set Not set 8.942 No unit Not set 0,000 0.00 0,00 %0 Not applicable Not applicable no measurement **3rd operation** Not operated Not set Not set Not set 0.000 8 942 No unit 00.00 0% 00'0 2nd operation 199.59 0,174 1 872 2.995 1.122 Operated 0.770 0.611 8.942 1429 1196.60 0:54 131% 4.50 0.127 00 9 γ. Γ 2 1 unit 2 No.1 35 1st operation 1315 0.147 0.741 2.947 0.174 Operated 1199.59 8.942 1196.60 0.635 0,904 0.457 2.658 - %1.PI 00.9 ŝ I unit No.1 0:55 4.50 5 \$ 원 i, (Flexible pipe) (Flexible pipe) m'/mm/und Recorded head Suctionside kw/m³ hr (m) Rutio iox: loss Ē Ξ н E <u>, 2 j</u> 2 1) River water level: at Chang Chhu Pump center level Unit of Pump Position No. Time (min) Temperature Discharge NPSII(rq)*¹ NPSII(uv) Suction head 8/19/95 Balance Pump No. Pipe length lead loss c) Q 4) Atmospheric Presser head dum Bend Consumed power vapor head Operated 5) Saturated HSAN () Date: loss 1 æ. ล

1) Coefficient of head loss (f) is caluculated applying-coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Hend Requirement

4) *2 Net Positive Suction Hend Available

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21/95 I Cluang Chhu t of Pump ap No. ap center level ap center level a		2nd operation 3rd operation 4th operation 5th operation 6th operation 7th operation Kemark	Operated Not operated Not operated Not operated Not operated Not operated		1 unit No unit No unit No unit No unit	No.1 Not set Not set Not set Not set	Not xet	Not set		0,000 0,000 0,000 0,000		4.50 0.00 13y pressure gage		that of mild steel	1kovd part of frexible	6.00 0.00 0.00 0.00 0.00 0.00	Part of flexible bise		Part of Devine box	<u>8.942</u> 8.942 8.942 8.942 1.1200	i6 no measurement no measurement no measurement no measurement no measurement		1547 Not applicable Not applicable Not applicable Not applicable	1.453 Not applicable Not applicable Not applicable Not applicable Not applicable	1.01		
\$21195 1st operation 2nd operation 3rd operation rvater level at Chang Chhu Not operated Not operated Not operated rvater level Unit of Pump Not operated Not operated Not operated Pention Position No. Not set 1196.60 Not set Not set Pump No. Not set 1095.60 Not set 1095.60 Not set Primp No. Not set 0.000 0.56 0.000 0.56 Primp center level Not set 1095.60 0.000 0.56 0.000 Discharge m/min/unit 0.000 0.56 0.000 0.56 0.000 Recorded beed Stationside 0.000 1.955.60 0.000 0.000 0.600 0.000			Not operate		No unit	Not set	Not set	Not set	•	0.000	%0	0.00		•		0.00				8.942					•		1
Z1/95 Ist operation 2nd operation 1 Ist operation 2nd operation n Chang Chhu Not operated Operated n Chang Chhu Not wet 1196.60 n Chang Chhu Not set 1199.59 n P No Not set 1199.59 n p center level Not set 1199.59 n p center level Not set 105% n itin 0.000 4.50 on head Suctionside 0.000 2.99 on head Suctionside 0.000 4.455 c (Flexible pipe) - 0.495 on head int(m) - 0.435 on head - - 0.435 c (Flexible pipe) - - 0.445 f oss - - - f oss - - - f oss - -		4th operation	Not operated		No unit	Not set	Not set	Not set		0.000	0%	0.00			-	0.00				8.942			Not applicable	Not applicable	· • •		•
21/95 1st opcration 1st opcration Not operated 1st opcration Not operated 1st opcration Not set 1st opcration 000 1st opcration 00		3rd operation	Not operated	-	No unit	Not set	Not set	Not set		000010	%0	00'0				000				8,942	no measurement		Not applicable	Not applicable			
21/95 1st opcration 1st opcration Not operated 1st opcration Not operated 1st opcration Not set 1st opcration 000 1st opcration 00		2nd operation	Operated		1 unit	No.1	24	1199.59	0:56	1.968	105%	4.50	2.99	0.084	0.495	6.00	0.92%	4.455	48	8.942	16		1547	1.453	3.079	1.626	10.8
21/95 (cl Pump No. Ition					No unit	Not set	Not set	Not set		()()()	0%	2.00.0			1	6.00				8.942	no measurement		Not applicable	Not applicable			
21/95 (cl Pump No. Ition				Chhu				Louis - The second		m ³ /min/unit	Ratio	Suctionside	hs	low		CCD1	1.1.//	nu (m)	(riexioic pit~)	(rieviole pite)	e ¹³	u		8	m		
Date : River water k Operated Atmospheric Saturated vapor head NPSH	8/21/95			wel at Chang	Unit of Pump	Pumo No.	Douition No.	A HANNEA I		Dischartor	-9	Recorded head	Suction head			Denu Pire trueth			, P		Temperature	head	4	NPSI (re)	NPSI (av)	Balance	
	Date:		1 	River water le	Operated			-----					000	2									1				

1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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Analysis Operation Monitoring Data

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Remark						• • • • • • • • • • • •				1.88 m'/min/unit	By pressure gage		Part of mild steel	Ikend part of frexible	Flexible howe	Part of flexible hose	c= 130	Part of flexible hore	FI., 1200					1.0 m	(Margin Iwad)	3. Ya
7th aneration		Not operated	•	No unit	Not set	Not set	Not set	ŀ	0000	%()	0.00		•	4	00.0	•			8.942	4	110 Incasarcincia	Not applicable	Not applicable	1	1	
6th morestine	nove exto mo	Not operated	1	No unit	Not set	Not set	Not set		0,000	0%0	0.00		. •		0.00		•		. 8.942		no measurement	Not applicable	Not applicable	•	•	а.
the surface of the	nomerado me	Not operated		No unit	Not set	Not set	Not set		0000	%0	0.00	I			0.00		1		8.942		no measurement	Not applicable	- Not applicable		•	
	th operation	Not operated		No unit	Not set	Not set	Not set		0.000	9%()	0.00			1	0.00				8.942		no measurement	Not applicable	Not applicable		•	
	3rd operation	Not operated	****	No unit	Not set	Not set	Not set		0.000	(1%	0.00				0.00				640		no measurement	Not applicable	Not applicable	•		
	2nd operation	Operated	1196.50	l unit	No. 1	P3	1198.75	()-59	2.408	128%	- 4,5()	2.25	0.123	C72.0	60 00 v	1 207	1001		8 022	0.714	17 0.200	1446	1.819	7 479	1.160	- L'L
	1st operation	Not operated		No unit	Not scl	Not set	Not set		0.000	0%	0.00				, (N)	0000	, . , . ;				no measurement	Not applicable	Not applicable		· · · · · · · · · · · · · · · · · · ·	
8/22/95			River water level at Chang Chlu	Unit of Punp	Duma No	Durition No.	Division surface based on the		Discharge m/mm/mit	i	Researched head Suctionside	Contour bourd			Burd tors	-	[[[cad loss [h] (iii)	1. A.	(Flex)	Presser	erature	neau	ADDRUGATION TO THE PARTY OF THE			ower kw/m
Date ;		•	1) River water le			- -ŀ	. .		 	· · ·			(SOI (S						- I	4) Atmospheric Presser	5) Saturated	Vapor nead nead	UCIN (0	-	Scherffung and	7) Consumed power

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1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Hend Requirement

4) *2 Net Positive Suction Head Available

8/23/95 Date:

			1st operation	2nd operation	3rd operation	4th operation	Sth operation	6th operation	7th operation	Remark
			Cyperated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
6	1). River water 1	River water level at Chang Chhu	1196.30	0£ 9611	•	•				
.	2) Operated	Unit of Pump	1 unit	l unit	No unit	Normit	No unit	No unit	No unit	
#7 31 64		Pump No.	No. I	No.1	Not set	Not set	Not set	Not set	Not set	
		Position No.	5	\mathbf{P}_{3}	Not set	Not set	Not set	Not set	Not set	
		Pump center level	1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
		Time (min)	0.52	0:52	1	•	Ĩ	•	F	
		Discharge m ³ /min/unit -	2.813	2.762	0.000	0.000	0000-0	000.0	0.000	•••••
		Ratio	150%	147%	%0	%()	0%	()%	<u>۲</u> ۵0	1.88 m'/min/unit
L	•	Recorded head Suctionside	4.50	4.50	()()'()	0.00	0.00	0.00	0.00	lly pressure gage
	3) loss	Stretion head his	2.45	2.45				ŀ	B	
		Pump loss	0.164	0.158			1	ŕ	1	Part of mild steel
		Bend loss	1.013	0.976					1	Bend part of Irexible
R •		Pipe length	X.00	8.00	0.00	0.(X)	0.00	0,00	0.00	Plexible base
98		[lend loss hf (m)	0.876	0.918			4		1	Part of flexible hese
		f (Flexible pipe)	1.394	1.606	1	· · · · · · · · · · · · · · · · · · ·	•	ŧ	1	c= 130
u accional		C (Flexible pipe)	() 82	79	•		•		1	Part of flexible base
	4) Atmospheric Presser	: Presser in	8,942	8.942	8.942 million	8.942	8.942	8.942	8.942	HL. 1200
	5) Saturated	Temperature °c	15	15	no measurement	no measurement	no measurement	no measurement	no measurement	
	vapor head head	Incad	0.174	0.174				1	•	
	HSdN (9	S	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	. •	NPSI l(rq)* ¹ m	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	*****
		NPSH(av)*2 m	4 4 1 2		- 4 -				e	1.0 3
		Balance	н на Н н н н н н					•	•	(Margin Iwad)

1) Coefficient of head loss (f) is calueulated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is culculated applying head loss (hf).

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kw/m²

7). Consumed power

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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Analysis Operation Monitoring Data

	Date :	8/24/95						•		
L			1st operation	2nd operation	3rd operation	4th operation	Sth operation	6th operation	7th operation	Kemark
معمقي			Operated	Operated	Not operated	Not operated	Not operated	Not operated	Not operated	
Ê		River water level at Chang Chlu	1196.50	1196.60		•			•	
1~	2) Operated	Unit of Pump	l unit	al dank a	No unit	No unit	No unit	No unit	No unit	
		Pump No.	No.1	No.1	Not set	Not set	Not set	Not set	Not set	
7949- 1 94		Position No.	P3		Not set	Not set	Not sct	Not set	Not set	
		Pump center level	1198.75	1198.75	Not set	Not set	Not set	Not set	Not set	
	•	Tune (min)	0.53	0:54		•	4			
		Discharge m ³ /min/unit	3.094	1,833	0.000	0.000	0000	0,000	0.000	2 11 11 11 11 11 11 11 11 11 11 11 11 11
	· .		165%	98%	0%0	%()	0%6	%.0	%()	1.88 m ⁴ /min/unit
<u> </u>		Recorded head Suctionside	4.50	4.50	00'0	0.00	0.00	0.00	00.0	By pressure gage
۲۹ مرغم	3) loss	Suction head hs	2.25	2.15		8	•			
		Punp loss	0.195			•	•			Part of mild steel
, ,		Bend low	1.225	0.430			4		•	Ikmd part of frexible
R		Pipe length	4.00	4.00	00.0	00'0	0,00	0.00	0.00	Flexible have
- 9		I toud tose ht (m)	0.832	1.848					•	Part of the sible bose
9				11 442			-			c= 130
-0-0-0-0-0									•	Part of flexible larse
_		21.12				200 P	C 00 0	CV0 8	6 4 9 2	14. 1200
	4) Atmospheric Presser	c Presser	8:942	8.942	8.942	×.742	0.744	0.744	***	
1	5) Saturated	l'emperature °c	16	16	no incasurement	no measurement	no measurement	no measurement	no measurement	:
	vapor head head	l head	0.187	0.187			•	•	•	
Ľ	6) NPSH	S	Not upplicable	1544	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
, reine (s.,		NPSII(rd)* ¹ n	Not upplicable	1.391	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	************ *
		III NPSI I(av)*?		3.102			•	•	•	E 0.1
;		Bulance		1.712		1		•	1	(Margin lwad)
<u>.</u>	 Consumed power 	power kw/m	\$ 9	0'11		•	•			
1		1) Coefficient of head loss (f) is caluculated applying	s (f) is caluculated		coefficient of flow rate C=130)= 13 0				

2) Coefficient of flow rate (C) is calculated applying head loss (hf).
3) *1 Net Positive Suction Head Requirement

+1 +2 Net Positive Suction Head Available

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Ist operation Zud operation Sit operation Sit operation Not operation Not operation Plant Operation Not operated Not operated Not operated Not operated Not operated Plant No Not wet Not wet Not wet Not wet Not wet Plant No Not wet Not wet Not wet Not wet Not wet Plant Not wet Plant Not wet Not wet <th>Date :</th> <th>8/25/95</th> <th></th> <th></th> <th>a sur a s</th> <th>The second s</th> <th></th> <th></th> <th>Table and the</th> <th>Dominely</th>	Date :	8/25/95			a sur a s	The second s			Table and the	Dominely
And operated Operated Not operated			1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	/ta operation	NCHIAL N
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	1		Operated	Not operated	Not operated	Not operated	Not operated	Not operated	Not operated	
	River water k	evel at Chang Chhu	and 09 9611	the second s			•. •. :		,	
Pump No. No.1 Net set Not set	Operated	Unit of Pump	l mit	No unit	No unit	No unit	No unit	No unit	No unit	
Position No. P3 Not set Not set <t< td=""><td></td><td>Pumo No</td><td>No.1</td><td>Not set</td><td>Not set</td><td>Not set</td><td>Not set</td><td>Not set</td><td>Not set</td><td></td></t<>		Pumo No	No.1	Not set	Not set	Not set	Not set	Not set	Not set	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Position No	Ed	Not set	Not set	Not set	Not set	Not set	Not set	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Pumo center level	1198.75		Not set	Not set	Not set	Not set	Not set	
		Time (min)	0:54						· · · · · · · · · · · · · · · · · · ·	
	:	; ;	2.537	0.000	0,00,0	0.000	0000	0,000	0.000	
		_ <u> </u> :	135%	() 9/ 1	0%	0%0	%()	0%()	%0	1.88 m'/min/unit
		Recorded head Suctionside	5.00	.000	0.00	00'0	0,00	0.00	0700	By pressure gage
Pump Bend Bend Bend I lead i loss 0.135 0.00 0.00 0.00 0.00 1000	550	Suction head hs	2.15						1939 - Andrea State -	
			0.135				ŀ		•	Part of mild steel
Pripe length 6.00 0.00 0.00 0.00 0.00 0.00 1.834 I tead losshr (m) 1.874 0.00 0.00 0.00 0.00 0.00 0.00 r r (Flexible pipe) 5.67 2.637 r r r r r c (Flexible pipe) 5.67 42 8.942 8.942 8.942 8.942 8.942 $1.1.1$ c (Flexible pipe) 5.67 r r r r r r r c (Flexible pipe) 5.67 42 8.942 8.942 8.942 8.942 8.942 $1.1.1$ c (Flexible pipe) 5.67 r r r r r r r d Temperature \bullet 1.7 no 0.174 no no r r r d Temperature \bullet 1.980 Not applicableNot applicableNot applicableNot applicableNot applicableNot applicable $NSEI(rqy)^{1}$ n 2.476 Not applicableNot applicableNot applicableNot applicableNot applicable $Not applicableNot applicableNot applicableNot applicableNSEI(rqy)^{2}m2.476Not applicableNot applicableNot applicableNot applicableNot applicableNot applicableNot applicableNSEI(rqy)^{2}6.90.4960.4960.4960.4960.49$			0.823	•				4	•	I kend part of frexible
I lead loss $hf'(m)$ 1.894 $Nartof n$ f(Flexible pipe)5.68742 $Nartof n$ c(Flexible pipe)5.68742 8.942 8.942 8.942 $Nartof n$ cdTemperature $°c$ 15no measurementno measurementno measurementno measurementno measurementno measurementcdTemperature $°c$ 15no measurementno measurementno measurementno measurementno measurementno measurementcdTemperature $°c$ 15no measurementno measurementno measurementno measurementno measurementcdTemperature $°c$ 15no measurementNot applicableNot applicableNot applicableNot applicableNot applicablen $NPSI [(rq)^*$ m1.980Not applicableNot applicableNot applicableNot applicableNot applicablen 2.476 Not applicableNot applicableNot applicableNot applicableNot applicableNot applicablennc Dower kwm^2 6.9 0.496 <		moth	6.00	00.00	0;00	000	00.0	00.0	00.0	Flexible hose
r (Flexible pipe) 5.687			1.894						• :	Part of Desible hose
C (Flexible pipe) 42 42 8.942 8.942 8.942 8.942 11.1. cd Temperature °c 15 no measurement no			5,687		· • • •	· · · · · · · · · · · · · · · · · · ·		•	, i	c= 130
plactic Presserm 8.942 8.942 8.942 8.942 8.942 8.942 8.942 11.1 odTemperature°c15no measurementno measurementno measurementno measurementno measurementno measurementodTemperature°c15no measurementno measurementno measurementno measurementno measurementno measurementodTemperature°c15no measurementno measurementno measurementno measurementno measurementodTemperature°c1393Not applicableNot applicableNot applicableNot applicableNot applicableNot applicableNPSI (rqu)*1m1980Not applicableNot applicableNot applicableNot applicableNot applicableNPSI (rqu)*2m2.476Not applicableNot applicableNot applicableNot applicableNot applicableNot applicableInc Dowerkw/m²6.90.496Not applicableNot applicableNot applicable			42						ı	Part of Ilexible base
cdTemperature°c15no measurementno measurementno measurementno measurementno measurementno measurementno measurementr headm0.174Not applicableNot applicable<	Atmospheric		8.942	8,942		8.942	8.942	8.942	8.942	
r head head m m 0.174 mot applicable Not applicable		ature	15	no measurement	no measurement	no measurement	no measurement	no measurement	no measurement	!
S 1393 Not applicable Not appl			0.174		1			•	•	
NPS1 [(rq) ⁻¹ n1.980Not applicableNot applicableNot applicableNot applicableNot applicableNPS1 [(rq) ⁻² m2.476	HSAN		1393	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
Si (av) ² m 2476 salance kw/m ⁵ 6.9			0%6 1	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
sulance kw/m ³ - 0.496 - 1.5		-	2,476			•	k	•	•	
kw/m ³ - res -		I3alance	0.496			and the second se	•	• • • • • • • • • •	•	And the second
	Consume po		6.9	and the second se	and the second se			*	-	

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

Coefficient of flow rate (C) is calculated applying head loss (hf):
 *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Hend Available

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-	6th operation 7th operation Remark	Not operated Not operated		No unit No unit	Not set Not set	Not set Not set	Not set Not set			0% 0.% 1.88 m'/min/unit	0.00 0.00 By pressure gage		Part of mild steel	- Read part of frexible	0.00 ().00 []texible here:	Part of flexible house	c= 130	Part of flexible hose		5,744 Lat.	no measurement no measurement		Not applicable Not applicable	Not applicable Not applicable		(Nargu head)		
	Sth operation	Not operated Not of		No unit No	Not set No	Not set No			0.000 0.000) %()	0 (X) ()		1		0 00		a a state and the second second second second a state and the second secon			8.942	no measurement		Not applicable	Not applicable		· · · · · · · · · · · · · · · · · · ·	•	
	tion 4th operation	ted Not operated		No unit	Not set	Not set				()%	0.00				0.00						cment no measurement		cuble. Not applicable	cable Not applicable			•	
and the second	2nd operation 3rd operation	Operated Not operated	1196.50	and unit we we will be	No.1 Not set	P3 Not sci	. 75		2.695 0.000		4.50 0.00	2.25	0,151		6.00			· · · · · · · · · · · · · · · · · · ·	58	8.942	17 no measurement	0.200	1292 Not applicable	2.280 Not applicable	2.913	0.632	• 8.4	
	1st operation 2n		•	No unit	Not set	Not set	Not set		0.000	%0	0.00				()() ()				•	8.942	no measurement		Not upplicable	Not applicable		 A summary in a summary in the summary state of the sum of the su		
8/26/95			Biver water level at Chang Chlu	Ilmit of Pump	Pumo No	Damition Mo	Postition 190.	runp center level	Discharae m?/min/unit	1	Recorded head Suctionside	Suction head hs.		Prunto Prominente anno 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999		ripe tengui		f (Flexible pipe)	C (Flexible pipe)	2 Presser	Temperature °c	hend	S	NPSII(ra)•1	NPSII(av)*2 m	Balance	wwer	
Date :			1) Biver water le									21 JACE	cent (c			R -	101			4) Atmospheric Presser	5) Saturated		HSdN Vy				7) Consumed nower	201010101

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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	KCIBALK	-								1.88 m/mm/unit	By pressure gage		Part of mild steel	Bend part of freshhle	Plexible hose	Part of flexible hose	c= 130	Part of thesible hose	1:1., 1200						2	(Nargin head)		
	/th operation	Not operated	•	No unit	Not set	Not set	Not set	•	0 ()()	0%	0.00	•	,		00.0		•	•	620.8		no measurement		Not upplicable	Not applicable	•	•		- - - - -
	6th operation	Not operated	•	No unit	Not set	Not set	Not set		0(0)	0%	0.00		•	· · · · · · · · · · · · · · · · · · ·	000				- C 040	0, 744	no meusurement		Not applicable	Not applicable	:			
	5th operation	Not operated	•	No unit	Not set	Not set	Not set		0,000	9%0	0.00				0.00	-			0.075	5.744 2.744	no measurement	•	Not applicable	Not applicable	•	۲	Þ	
	4th operation	Not operated		No unit	Not set	Not set	Not set	· · · · · · · · · · · · · · · · · · ·	0.000	%()	0.00				00.0					8 442	no measurement		Not applicable	Not applicable				=130,
	3rd operation	Not operated		No unit	Not set	Not set	Not set		0.000	%0	0,00				00.00	and the second se				8.942	no measurement		Not applicable	Not applicable				cnt of flow rate C
	2nd operation	Not operated	and the second se	No unit	Not set	Not set	Not set		0,000	0%0	0,00				0.00	and the second				8.942	no measurement		Not applicable	Not applicable			· · · · ·	l applying coeffici
	1st operation	Operated		l unit	No.1	p]	1200.58	1 (X)	2.407	128%	5.50	4.28	0.122	0.741	8 (X)	0,260		667 N	1 [4	8.942	15	0.174	1446	1.818	2,005	0,187	5.7 2.4	1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130
and the second			g Chhu						m'/mm/unit	Ratio	Recorded head Suctionside	lis				hf (m)		(Flexible pipe)	(Flexible pipe)	W	°c	u	-	m	m		kw/m ³	out of head loss (
8/28/95			level at Chan	Unit of Pump	Pumn No.	Davition No	During conter louid	nin and	Discharge		Recorded her	Suction head	D	(tend	Pine length				υ 	ic Presser	Temperature	d head	S.	NPSH(ru)*	NPS11(av)	Balance	power	1) Coefficie
Date :			1) - River water level at Chang Chhu	2) Onerated								3) Insc								4) Atmospheric Presser	5) Saturated	vapor head head	HSAN (9		1 • • •		7) Consumed power	

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement. 4) *2 Net Positive Suction Head Available

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(Margin head) 1.88 m/mm/um kend part of frexible art of flexible have Part of flexible bose barr of mild steel Hy pressure gage Flexible hose 1.1. 1200 Remark c= 130 1,0 m no measurement Not applicable Not applicable 7th operation Not operated Not set Not ket No unit 8.942 Not set 0.000 00.0 0.00 % Not applicable Not applicable no measurement 6th operation Not operated No unit Not set Not set Not set 8.942 0,000 0.00 0,00 %0 no measurement Not upplicable Sth operation Not applicable Not operated No unit Not set Not set. 8.942 Not set 0.000 00.00 00.00 %() no measurement Not upplicable Not applicable 4th operation Not operated No unit Not set Not set Not set 8.942 0,000.0 00.0 0,00 %() no measurement Not applicable Not applicable **3rd operation** Not operated 8.942 No unit Not set Not set Not Ket 0.000 0.00 0,00 %0 ٩ 2nd operation 8.942 Operated -086-1--3,463 1196.50 1.483 l unit No.1 198.75 2.25 0.135 0.823 0.794 2.186 0.187 1393 2.537 4,00,4 1.15% 7 C 4,00. . اح 0:54 -2 3 1st operation 198.75 1487 4,014 Operated 16 0.187 2.311 1196.70 2.196 2.305 12.3% 0.113 0.680 0.659 8.942 1 unit 4,00 No.1 0:59 3.50 2.05 2 ~ ۲ ۲ (Flexible pipe) (Flexible pipe) in Main/unit **Recorded head Suctionside** . ht'(m) kw/m^{*} Rutio SSO. loss E <u>ខ</u> ر.^ي E 2 E 1) River water level at Chang Chhu Pump center level Time (min) Discharge Unit of Pump Saturated Temperature vapor head head Position No. NPSI I(av)*2 NPSI I(rq)*1 Suction head Balance 8/30/95 Pump No. Pipe length lead loss v, . سبه U U 4) Atmospheric Presser dumd Bend 7) Consumed power 2) · Operated 5) Suturated HSAN Date 3) loss ত R 103

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130.

2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *! Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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	Date :	8/31/95									
L				1st operation	2nd operation	3rd operation	4th operation	5th operation	6th operation	7th operation	Remark
				Operated	Not operated	Not operated	Not operated	Not operated	Not operated	Not operated.	**** ******
<u> </u>	1) River water	River water level at Chang Chhu	1. 	1196.80	•		1	1	•		
J	2) Operated	Unit of Pump		tim 1	No wit	No unit	No unit	No unit	No unit	No unit	
c.a. 940		Pump No.		No.1	Not set	Not see	Not set	Not set	Not set	Not set	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		Position No.	<u>.</u>	54	Not set	Not set	Not set	Not set	Not set	Not set	
00424		Punp center level		1198.75	Not set	Not set	Not set	Not set	Not set	Not set	
		Time (min)		101	· · · · · · · · · · · · · · · · · · ·		•		•	1	
		Discharge m'/min/unit	/unit	2.623	0,000	0.000	0.000	0.000	0.000	0.000	
-		!	0	140%	0%	00%	%0	%()	()%	0%	1.88 m [*] /min/unit
. .		Recorded head Suctionside	ide	4.00	0.00	00.0	0.00	0.00	0,00	0,00	By pressure gage
lifting)	3) loss	Suction head his		1.95				t d		-	
1. A. 1		Pump loss		0.144		1		r F	•		Part of mild steel
والبر كنت				0.880				1		L	Bend part of frexible
R		Pipe length		2.00	00.00	00.0	0.00	0,00	0.00	00'0	Flexible hose
- 1([] [card loss ht (m)]) (p	1.028						i i	Part of flexible bese
)4		Ē,	: pipc)	3.029							c≡ 130
		C (Flexible pipe)	c pipe)	33				•	:	r	Part of Resible hose
╷└━╼	4) Atmospheric Presser			8.942	8.942	8.942	8.942	8.942	8 942	8.942	151., 1200
.	5) Suturated	Temperature °c		91	no measurement	no measurement	no measurement	no incusurement	no measurement	no measurement	
	vapor head head	d head m		0.137			4	•		1	
	6) NPSH	s S S		1,34()	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	•	NPSH(rq)* ¹ m		2.132	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
	-	m "*" " m		3.443	a a su anna an anna an anna an anna an anna an an		•	•	i	•	1.0 m
		Balance		1.311					2	•	(Nargin Iwad)
نجرا.	7) Consumed power	power kw/m ³	г.ш	···· 4.4		•	1	•	• • • • •	•	
J											

1) Coefficient of head loss (f) is caluculated applying coefficient of flow rate C=130. 2) Coefficient of flow rate (C) is calculated applying head loss (hf).

3) *1 Net Positive Suction Head Requirement

4) *2 Net Positive Suction Head Available

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