

APPENDIX 2

PHOSPHORIC ACID PLANT DAILY LOG SHEETS ON PG SLURRY SAMPLING DAYS

**NOTE: EACH SHEET CONSISTS OF FOUR PARTS AND SHOULD BE RECONSTRUCTED
IN THE FOLLOWING MANNER:**

TOP LEFT	TOP RIGHT
BOTTOM LEFT	BOTTOM RIGHT

25/10/2000 18:00 Start Time

26/10/2000 18:00 Finish Time

Clear

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

Time	Rock Slurry	Rock Slurry	Rock Feed (weighbelt)	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid	H ₂ SO ₄ to Acid	Recirculation Slurry (FIC25003)	Reactor 2	Cooler	Cooler	Reactor 2 Level (LI25001)	Return Acid	Return Acid	HH Filter Feed			
	Filter No. 1 sg	Filter No. 2 sg		agitator amps	agitator amps	agitator amps	agitator amps	Mixer B (FIC25001)	Mixer A (FIC25002)		Temperature (TI25004)	Vacuum A (PI25002)	Vacuum B (PI25003)		Mixer A (FIC30004)	Mixer B (FIC35004)	HH Filter Feed	HH Filter Feed	HH Filter Feed	HH Filter Feed
	41DI20001.PV	41DI20002.PV		4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV		44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
	t/m ³	t/m ³		amps	amps	amps	%	m ³ /h	m ³ /h		C	kPa	kPa		m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
25/10/2000 18:00:00			0.9	302.5	321.5	146.3	35.5	0.2		1515.6	98.7	39.7	39.6	84.0	113.9	113.7	67.9	118.7	117.1	114.7
25/10/2000 19:00				323.0	317.5	140.1	40.0			1898.1	97.8	41.8	41.6	91.6	100.6	99.2	62.5	120.1	117.8	21.4
25/10/2000 20:00		1.70	144.9	269.0	317.5	136.2	38.0	27.0	26.9	1050.9	98.7	43.8	42.7	86.1	79.3	80.0	37.0	140.8	130.6	96.6
25/10/2000 21:00		1.70	141.6	267.5	320.5	128.3	39.5	17.0	17.0	1067.8	96.3	46.4	44.4	86.9	79.8	80.0	40.7	139.9	46.0	93.9
25/10/2000 22:00		1.70	138.4	276.0	313.5	144.4	39.5	6.4	6.2	1021.9	98.4		45.7	92.7	80.3	79.4		149.6	152.7	64.6
25/10/2000 23:00				327.5	331.0	141.9	39.0	0.1		1070.7	96.9		45.7	92.0	80.0	79.9		155.7	139.6	98.5
26/10/2000 0:00		1.70	177.4	258.0	324.5	140.9	37.0	21.0	21.0	1240.0	97.8		49.6	76.5	100.2	99.6		130.1	98.3	89.0
26/10/2000 1:00		1.69	175.7	261.5	311.5	135.3	36.5	20.2	20.2	902.0	100.1		41.5	78.1	99.6	99.9		129.8	88.7	112.1
26/10/2000 2:00		1.67	166.3	258.0	311.0	136.4	37.0	20.2	20.2	697.0	97.3	50.0		75.7	100.1	99.2		119.9	125.2	0.1
26/10/2000 3:00				311.5	316.0	136.9	37.0			590.8	95.4	45.4		72.5	80.0	80.0		130.1	128.8	
26/10/2000 4:00				305.0	309.0	140.9	35.0			279.4	92.7			62.8	59.7	59.7		129.3	110.8	
26/10/2000 5:00				310.0	310.5	147.5	33.5			185.5	90.4			50.7		53.1		100.1	100.5	
26/10/2000 6:00				313.5	303.5	130.5	36.0			131.4	89.3			50.8			6.6	85.1	83.7	
26/10/2000 7:00				328.5	306.0	131.4	37.0			2.1	87.9			54.8		4.5	4.6	85.2	100.5	4.1
26/10/2000 8:00			0.3	314.5	309.0	144.6	37.5				86.2			55.7	4.2	4.2		93.7	97.9	0.8
26/10/2000 9:00			0.6	317.5	300.5	140.6	37.5				84.7			56.1	6.8		3.2	85.6	167.6	8.8
26/10/2000 10:00			0.3	320.5	313.0	132.8	36.0				83.5			63.7	0.3			130.3	84.3	0.1
26/10/2000 11:00			0.1	313.0	303.5	136.5	34.5				82.4			70.4	51.3	16.5		123.4	3.5	10.9
26/10/2000 12:00				311.5	294.0	136.9	36.0				80.2			75.2	60.3	59.9		150.5	2.1	1.9
26/10/2000 13:00				314.5	291.0	146.6	36.0				78.7			70.8	75.8	187.6		149.8	99.6	24.9
26/10/2000 14:00				319.0	289.5	134.1	33.5				76.4			65.5	74.6			115.7	0.1	
26/10/2000 15:00			0.0	313.0	256.0	140.8	34.5				75.5			65.4	75.3	4.2	0.6	155.1	126.7	0.8
26/10/2000 16:00			0.1	320.5	239.5	138.9	34.0				74.5			61.4	75.0			160.0	70.3	4.5
26/10/2000 17:00			0.2	312.0	216.0	131.6	35.0				73.3			55.4	83.7	0.8	1.1	170.2	170.6	5.1
26/10/2000 18:00			0.1	317.5	248.5	136.1	29.0				71.3			53.1			1.5	117.8	3.2	
Total for shift			3921						970		779.8									

OCTOBER 2000 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)			Waste Water (LI70002)	Return water from Stack to Reactor 1A Cooling Tower Temp	Reactor 1B Temp	Reactor 1C Temp		Week 1	Week 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV		44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h		m³/h															
25.0	24.9	26.0	26.0	277.0		204	41.4	99.4	98.7	99.9	87.5	94.1	85.0	64.6	75.9	93.9	98.8		33.4	33.0	0%
25.0	30.0	30.0	29.9	146.4		209	42.4	94.4	95.5	98.4	86.5	94.1	85.2	63.0	76.4	93.2	98.1		33.4	33.1	0%
0.2	30.7	30.8	16.3	163.2		164	39.3	95.7	95.2	97.1	86.0	94.1	85.2	61.0	78.0	92.5	97.5		37.0	30.2	40%
25.0	30.7	30.7	16.1	166.7		132	41.3	96.8	96.1	97.0	86.6	94.2	85.3	61.0	79.8	92.4	97.4		44.3	26.7	39%
25.0	30.8	30.7	16.3	133.8		172	40.7	98.4	96.4	96.9	87.3	94.2	85.4	60.9	80.8	92.4	97.3		51.4	23.0	38%
25.0	30.7	30.8	16.3	166.8		210	40.3	96.8	94.9	96.2	87.4	94.3	85.4	60.2	84.1	92.1	97.1		58.4	21.6	0%
25.1	25.5	25.6	25.7	187.1		169	41.0	97.0	95.0	95.7	86.9	94.4	85.6	58.8	88.4	91.6	96.6		65.1	19.7	49%
25.0	25.5	25.8	25.4	195.4		207	41.6	99.3	96.9	96.3	85.9	94.4	85.6	57.0	92.5	90.9	96.0		71.8	15.0	49%
24.9	25.7	25.8	41.1	152.6		207	0.2	99.3	97.8	97.1	84.8	94.4	85.7	54.9	97.2	90.2	95.2		73.0	15.9	46%
25.0	30.4	30.7	16.0	146.3		156	0.2	99.1	97.1	97.2	83.6	94.4	85.8	55.1	97.5	89.5	94.5		71.9	21.6	0%
25.0	14.9	15.0	17.8	142.1		164	0.2	95.8	95.4	96.6	82.4	94.4	85.8	56.3	97.5	88.9	94.0		71.9	28.1	0%
25.0	14.9	25.8	18.8	130.6		206	39.3	94.1	93.7	95.5	81.1	94.4	85.8	57.9	97.5	88.3	93.4		71.8	34.4	0%
25.0		26.4	12.6				36.7	91.9	92.2	94.4	79.5	94.4	85.8	55.6	97.5	87.6	92.7		71.9	40.9	0%
24.9	0.0	26.7	13.1			79	37.8	92.9	92.3	93.8	78.0	94.4	85.8	53.7	97.5	86.9	92.1		71.8	46.4	0%
25.0	0.6	27.6	14.8			208	40.1	91.7	91.4	92.9	76.4	94.2	85.6	51.4	97.4	86.2	91.4		71.6	48.4	0%
25.0		27.0	13.2			42	0.3	90.5	90.6	92.0	74.6	94.1	85.4	49.2	97.3	85.5	90.7		71.1	54.5	0%
25.0	0.6	27.1	13.0			181	0.3	89.8	90.2	91.2	72.9	94.1	85.4	47.4	96.8	84.9	90.1		70.8	59.1	0%
25.0	15.4	27.3	13.4	59.2		108	0.2	89.1	89.5	90.3	71.7	94.2	85.7	47.4	95.1	84.0	89.5		71.4	63.9	0%
24.9	19.9	27.0	13.6	67.3		203	0.2	88.5	88.6	89.4	70.4	94.2	85.8	47.9	93.2	83.2	88.6		71.9	69.4	0%
25.0	14.8	15.0	18.2	101.9		160	0.2	87.8	87.8	88.6	68.9	94.2	85.9	51.0	91.4	82.4	88.1		72.0	74.9	0%
25.0	15.3	29.0	19.3	38.7		164	0.2	87.2	87.1	87.9	67.6	94.3	85.9	53.3	89.6	81.7	87.4		72.1	80.5	0%
25.1	14.8	27.1	15.3	43.2		17	0.2	86.6	86.4	87.2	65.7	94.2	85.8	56.0	87.7	81.0	86.8		71.8	86.2	0%
25.1	15.1	26.9	15.5	41.5		21	0.2	86.2	85.4	86.4	64.4	94.4	85.9	59.8	85.9	80.3	86.0		71.9	91.6	0%
24.9	15.1	26.9	15.4	39.3		21	7.2	85.8	83.4	85.7	62.7	94.2	85.8	63.6	84.0	79.6	85.2		75.1	94.1	0%
25.0	15.1	26.6	15.2	17.9		156	7.2	85.4	81.9	85.1	61.2	94.2	85.7	67.4	82.3	78.7	84.1		81.3	94.1	0%
						4064															
						169.3															

OCTOBER 2000 – TOP RIGHT

	52% Prod	Desuper Steam	Desuper Steam HEX Steam	Flash Chamber Flash Chamber	Acid Outlet	Acid Inlet	
	40% Feed Rate Rate	Flow	Pressure Temperature	Temperature Pressure	Temperature	Temperature	Conductivity
	44FIC60001.PV 44FI45003.PV	44FIC11009.PV	44PIC11007.PV 44TI45001.PV	44TIC45003.PV 44PIC45001.PV	44TI45002.PV	44TI45004.PV 44CI45001.PV	
Time	m ³ /h	m ³ /h	t/h	kPa	C	C	uS/cm
25/10/2000 18:00:00	70.1			351	93	63.8	74.8
25/10/2000 19:00				428	93	69.3	79.9
25/10/2000 20:00				429	93	70.1	74.4
25/10/2000 21:00				429	93	70.7	86.4
25/10/2000 22:00				429	93	71.3	81.4
25/10/2000 23:00		1.3		430	93	71.0	82.6
26/10/2000 0:00				429	93	65.3	81.1
26/10/2000 1:00				431	93	58.9	80.6
26/10/2000 2:00				428	93	55.1	84.9
26/10/2000 3:00	59.2	0.4		428	93	53.7	85.7
26/10/2000 4:00	54.8			427	93	52.2	85.4
26/10/2000 5:00	53.6			428	92	78.0	78.1
26/10/2000 6:00				430	92	75.7	78.6
26/10/2000 7:00				428	92	76.1	81.7
26/10/2000 8:00	53.3			428	92	73.6	77.8
26/10/2000 9:00	48.1			428	92	70.6	79.3
26/10/2000 10:00	47.4			428	91	69.0	81.1
26/10/2000 11:00	47.1			430	91	67.6	81.5
26/10/2000 12:00				432	90	66.7	83.2
26/10/2000 13:00		0.1		429	103	67.3	85.7
26/10/2000 14:00		0.6		426	109	72.7	82.2
26/10/2000 15:00				427	104	85.6	77.7
26/10/2000 16:00				430	100	89.5	83.8
26/10/2000 17:00				430	98	89.2	86.5
26/10/2000 18:00				427	98	89.1	81.6
#DIV/0!		#DIV/0!					

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV 43LI10006.PV 43LI10007.PV			41LI20001.PV 41LI20002.PV 41LIC20003.PV			44LI60001.PV 44LI60002.PV	
	tons	tons	tons	%	%	%	%	%
25/10/2000 18:00:00	9939.2	8256.3	8983.8		33.4	33.0	87.5	94.1
#####	9977.2	8338.7	8477.6		81.3	94.1	61.2	94.2
Change	38.1	82.4	-506.2	0.0	48.0	61.1	-26.3	0.1
		26793.5		109.0		-26.1		

24 Hour Production Figures			Assumptions	
Rock Consumed	3921 tonnes	22.8% P2O5 @	20.0% moisture	
H ₂ SO ₄ Consumed	970 m3		1.83 sg	
Intermediate Acid	1299 m3	39% P2O5 @	1.48 sg	
Weak Acid	368 m3	26.6% P2O5 @	1.35 sg	
Interm. Acid evap.	451 m3			
Strong Acid produced	282 m3	53% P2O5 @	1.67 sg	
HH Cake produced	5223 tonnes	1.10% P2O5 @	22.4% moisture	
Waste Water	4064 m3	1.14% P2O5 @		
Steam Consumed	96 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P ₂ O ₅	3.5			
t H ₂ SO ₄ / t P ₂ O ₅	1.96 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.39			
Calculated Efficiencies			Simplified	
%P ₂ O ₅ loss	5.4%	5.4%	Note: Only current if HH cake produced	
%P ₂ O ₅ losses calc.	91.0 tons to gypsum & wastewater			

		%P2O5 lossEfficiency	
A	22.81 % P2O5 in rock	Simplified	5.38 94.62
B	27.63 % CaO in rock	Actual	5.35 94.65
C	37.52 % P2O5 in product acid (average value)		
D	0.24 % CaO in product acid (average value)		
E	1.10 % P2O5 (total) in dry HH cake		
F	24.75 % CaO in dry HH cake		
		%P2O5 lossEfficiency	
A	22.81 % P2O5 in rock	Simplified	5.38 94.62
B	27.63 % CaO in rock	Actual	5.36 94.64
C	39.42 % P2O5 in product acid (average value)		
D	0.20 % CaO in product acid (average value)		
E	1.10 % P2O5 (total) in dry HH cake		
F	24.75 % CaO in dry HH cake		

Assuming 40% only

OCTOBER 2000 – BOTTOM LEFT

#####														
Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
85.0	64.6	75.9	93.9	98.8	77.0	Level new	61.2	94.2	85.7	67.4	82.3	78.7	84.1	
85.7	67.4	82.3	78.7	84.1	88.7	Level old	87.5	94.1	85.0	64.6	75.9	93.9	98.8	
0.7	2.8	6.4	-15.1	-14.6	11.6	P ₂ O ₅ total old	352.6	379.3	827.3	628.5	738.1	1309.1	1377.1	5612.0
		9.9		-29.8		P ₂ O ₅ total new	246.7	379.9	834.2	655.6	800.8	1097.9	1173.0	###

Production if Granulation offline ####													
							P2O5	days		sg	P ₂ O ₅ No Tanks	P ₂ O ₅	
	715.2	tons P ₂ O ₅				Weak Acid	627	3.0	20%	1.26	403	2	806 0.777
	1775.1	tons sulphuric acid (98.5%)				Intermediate Acid	2,291	3.7	40%	1.52	973	3	2918 0.785
759.9						Strong Acid	2,271	3.3	52%	1.68	1394	2	2789 0.814
132.5	892.4	tons 20% & 40% P ₂ O ₅ produced				P2O5 total	5,188						6514 79.6

248.2	tons 52% P ₂ O ₅ produced					Production Used by Granulation			Conc.		Total		
44.5	tons P ₂ O ₅ lost in HH filter cake						m3	P2O5	sg	P2O5			
46.5	tons P ₂ O ₅ lost in waste water					Weak Acid	349.0	20%	1.26	88			
						Intermediate Acid	403.8	40%	1.52	246			
						Strong Acid	333.5	52%	1.68	291			
										624	tpd		

							Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP
							Weak	0.065	8.8	210.6	13.9%		135	3240
							Intermediate	0.191	25.8	618.84	40.7%			
							Strong	0.213	28.8	690.12	45.4%			
								0.469	63.32	1519.6	100%			

94.6%	Filter Recovery Efficiency (Simplified HFT method)
124.8%	Acid produced to Rock Input Efficiency
87.3%	Input - Losses Efficiency

	m3
Weak	34.8
Intermediate	42.4
Strong	33.0

Amount of P2O5 contained in all 7 storage tanks when full

Description	Storage	sg	Acid	P ₂ O ₅
	m ³	t/m ³	tons	tons
Weak Acid	3200	1.26	4032	806.4
Intermediate Acid	4800	1.52	7296	2918
Strong Acid	3200	1.676	5363	2788.9
				6513.7

Acid consumption 2.6t (100% H₂SO₄) per t P₂O₅

Tons H ₂ SO ₄ required	16936tons as 100% sulphuric acid
Tons H ₂ SO ₄ required	17193tons as 98.5% sulphuric acid

OCTOBER 2000 – BOTTOM RIGHT

15/11/2000 18:00 Start Time 16/11/2000 18:00 Finish Time			PHOSPHORIC ACID PLANT DAILY LOGSHEET																			
			Clear Old		Update Shift		Update															
	Rock Slurry Filter		Rock Feed (weighbelt)	Reactor 1A agitator amps	Reactor 1B agitator amps	Reactor 1C agitator amps	Reactor 2 agitator amps	H ₂ SO ₄ to Acid Mixer B (FIC25001)	H ₂ SO ₄ to Acid Mixer A (FIC25002)	Recirculation Slurry (FIC25003)	Reactor 2 Temperature (TI25004)	Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)	Reactor 2 Level (LI25001)	Return Acid Mixer A (FIC30004)	Return Acid Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)		
	No. 1 sg	No. 2 sg																				
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV		
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h		
15/11/2000 18:00:00	1.72	1.71	249.8	267.5	321.5	139.1	38.0	44.0	22.1	1850.0	96.8	48.9	47.7	79.3	88.1	181.9	154.8		155.3	135.2		
15/11/2000 19:00	1.72	1.71	268.2	269.0	320.5	141.7	41.0	44.1	22.1	1849.4	97.1	49.2	47.9	76.9	87.9	182.1	147.7		149.8	134.8		
15/11/2000 20:00	1.71	1.70	247.4	267.5	324.5	139.8	39.5	44.1	22.1	1850.4	97.2	49.0	47.8	76.3	88.1	181.9	139.8		140.3	134.9		
15/11/2000 21:00	1.71	1.70	245.1	273.0	328.5	139.7	37.5	39.3	17.5	1848.0	96.9	48.9	47.6	76.7	88.0	182.0	142.1		141.9	134.9		
15/11/2000 22:00	1.71	1.70	250.8	264.5	321.5	134.7	40.5	43.5	21.5	1849.8	96.9	48.6	47.1	76.3	88.0	182.1	139.9		140.0	135.0		
15/11/2000 23:00	1.71	1.70	247.6	264.5	323.0	139.4	40.5	40.0	18.2	1848.6	96.9	49.0	47.6	75.8	87.8	182.2	155.1		154.7	134.9		
16/11/2000 0:00	1.71	1.71	207.1	278.5	317.5	146.2	41.0	33.2	16.6	1749.0	96.4	48.8	47.4	69.0	76.0	152.0	154.7		154.9	134.8		
16/11/2000 1:00	1.71	1.71	208.7	272.0	316.0	145.4	38.0	33.3	16.7	1748.9	96.4	49.0	47.7	62.3	75.9	152.0	144.9		154.8	99.7		
16/11/2000 2:00	1.71	1.71	179.6	281.5	322.5	145.2	39.5	20.7	21.0	1319.2	96.0	49.2	47.5	57.0	99.0	100.8	155.2	0.8	155.1	85.2		
16/11/2000 3:00				320.0	330.0	148.2	36.5			1098.9	96.0			67.6	99.6	100.3	154.8		155.1	8.6		
16/11/2000 4:00				341.0	331.5	146.2	37.5			1098.9	90.8			56.2			85.4	4.7	41.3	5.1		
16/11/2000 5:00				338.0	337.0	144.1	36.5			1099.8	88.6			56.2			85.0	5.6		2.9		
16/11/2000 6:00				334.0	335.5	142.6	36.5			1098.8	87.0			56.4			85.1			11.5		
16/11/2000 7:00				339.5	332.5	151.3	36.5			1099.6	85.7			56.2			85.1	3.4	30.3	2.4		
16/11/2000 8:00			0.1	341.5	325.5	151.3	37.0			1101.2	84.5			56.0			85.3		5.7			
16/11/2000 9:00			0.2	341.0	334.0	144.1	37.0			1100.7	83.5			56.3			84.9		17.4	3.3		
16/11/2000 10:00			0.3	341.0	332.5	144.6	37.5			1100.1	82.6			56.2			85.1		0.2	0.6		
16/11/2000 11:00			0.3	341.0	342.5	146.6	36.0			1100.2	81.7			56.4			84.8		0.1	14.3		
16/11/2000 12:00			0.4	342.5	341.0	147.9	36.5			1099.5	80.9			56.2			85.1		13.6	0.1		
16/11/2000 13:00			0.4	338.5	335.5	145.2	36.0			1099.9	80.3			56.1			85.0		0.0	9.3		
16/11/2000 14:00			0.4	342.5	331.0	142.3	36.0			1099.7	79.6			56.0			84.9		0.0	7.9		
16/11/2000 15:00			0.5	338.5	328.0	141.6	35.5			1099.8	78.9			55.8			85.0		7.0	2.2		
16/11/2000 16:00			0.3	344.0	336.5	137.5	37.0			1101.2	78.1			56.2			85.3		41.5	2.8		
16/11/2000 17:00			0.3	342.5	323.0	144.8	36.5			1098.6	77.5			56.1			85.2		54.2	6.8		
16/11/2000 18:00			0.2	337.0	336.5	142.4	36.0			1102.3	76.8			56.3			84.6		5.4	5.5		
Total for shift			6689						1649	1319.3												

NOVEMBER 2000 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production	
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV		
m³/h	m³/h	m³/h	m³/h	t/h	m³/h																
38.4		38.4	37.0	326.7	141	86.9	99.3	96.3	97.9	24.9	69.5	34.7	23.9	79.3	30.7	95.9	92.2	49.8	90.4	69%	
38.3		38.5	37.1	318.6	141	86.9	99.6	96.9	98.7	25.0	69.5	32.4	24.1	84.3	32.4	96.2	92.2	51.7	90.4	75%	
38.4		38.3	36.9	314.2	178	86.9	99.6	97.0	99.1	25.2	69.4	30.1	23.9	88.7	34.2	96.3	92.2	53.5	90.6	69%	
38.3		38.5	37.1	305.0	156	72.1	99.4	96.9	99.1	25.4	69.4	28.0	24.8	91.5	36.3	96.6	92.2	54.8	90.6	68%	
38.5		38.3	36.9	311.6	242	57.5	99.5	96.7	98.8	25.3	69.4	30.4	24.5	91.6	37.9	96.7	92.2	57.0	90.6	70%	
38.5		38.4	37.1	318.8	140	62.6	99.2	96.5	98.7	25.4	69.5	32.6	24.5	91.6	39.7	96.7	92.2	58.5	90.7	69%	
30.8		30.7	30.7	353.6	165	87.4	98.8	96.3	98.6	25.8	69.5	35.2	24.9	91.6	41.8	96.7	92.2	60.6	90.7	58%	
26.9		27.1	27.1	323.1	237	86.4	98.5	95.8	97.8	25.8	69.5	36.2	24.4	91.5	43.6	96.6	92.2	63.2	90.7	58%	
36.1		36.1	19.4	295.0	183	71.1	97.8	95.2	97.2	25.7	69.5	39.6	24.1	91.5	44.3	96.6	92.2	65.9	90.7	50%	
35.9		36.1		235.0	141	53.2	97.7	94.3	96.5	25.7	69.1	40.8	24.0	91.5	48.5	96.1	92.2	70.4	90.6	0%	
		31.8			245	90.9	96.5	93.1	95.7	25.9	67.6	43.3	24.1	91.5	49.1	94.5	92.2	76.6	90.7	0%	
				1.1	135	87.2	95.4	92.7	95.0	25.8	66.2	41.2	23.9	91.4	48.6	93.0	92.2	79.4	90.7	0%	
				1.1	198	84.4	94.0	91.8	94.4	25.9	64.7	39.3	23.9	91.4	48.4	91.6	92.2	79.4	90.7	0%	
				1.2	17	80.9	92.9	91.2	94.0	26.0	63.3	37.3	23.9	91.4	48.5	90.3	92.2	79.5	90.7	0%	
				1.3	167	63.4	91.9	90.6	93.4	25.8	61.5	35.4	23.6	91.4	48.7	88.7	92.2	79.4	90.6	0%	
				1.3	66	37.3	91.2	90.2	93.0	25.7	60.1	33.3	23.4	91.2	48.8	87.1	92.2	78.9	90.6	0%	
				1.4		0.2	90.3	89.7	92.6	25.5	58.5	31.1	23.0	91.1	49.1	85.8	92.2	78.0	90.6	0%	
				1.5		0.3	89.2	89.1	92.1	31.0	57.0	29.2	22.9	91.1	49.2	84.1	92.2	77.8	90.6	0%	
				1.6		0.3	88.5	88.7	91.7	33.0	55.2	26.8	22.5	91.1	49.4	82.8	92.2	77.7	90.6	0%	
				1.6	0	0.3	87.7	88.2	91.3	32.1	53.6	24.6	22.5	91.0	49.5	81.0	92.2	77.7	90.6	0%	
				1.6	25	0.3	87.5	87.9	90.9	32.0	51.9	22.8	22.5	91.0	49.5	79.5	92.2	77.6	90.6	0%	
				1.6	125	0.3	86.7	87.3	90.4	32.9	50.4	21.1	22.4	91.0	49.2	77.7	92.2	77.3	90.6	0%	
				1.5	18	0.3	85.7	86.5	89.8	33.2	49.1	19.3	22.9	91.1	49.0	75.8	92.2	77.8	90.5	0%	
				1.5	27	0.2	85.3	86.1	89.3	33.4	47.8	17.5	23.2	91.2	49.0	74.1	92.2	78.0	90.6	0%	
				1.4		0.2	84.6	85.5	88.8	33.4	46.2	15.5	23.3	91.1	48.7	72.0	92.2	79.2	90.6	0%	
					3828																
					159.5																

NOVEMBER 2000 – TOP RIGHT

	40% Feed Rate	52% Prod Rate	Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
15/11/2000 18:00:00	46.7	33.5	18.0	344	111	84.6	16.4	86.3	85.6	13.1
15/11/2000 19:00	42.6	29.4	18.0	345	112	85.1	16.4	86.7	86.1	12.7
15/11/2000 20:00	48.5	38.7	18.0	346	112	85.5	16.3	87.1	86.4	12.7
15/11/2000 21:00	49.3	38.8	18.1	349	112	84.6	16.4	86.2	85.5	12.4
15/11/2000 22:00	45.8	30.6	18.0	344	111	84.6	16.4	86.3	85.6	13.2
15/11/2000 23:00	44.6	31.9	18.0	348	112	85.2	16.4	86.9	86.2	12.5
16/11/2000 0:00	48.1	38.2	13.0	347	107	84.9	16.4	86.4	86.0	12.2
16/11/2000 1:00		8.3		124	100	86.8	34.0	87.1	88.0	15.7
16/11/2000 2:00		54.5			93	88.6	34.2	89.0	89.8	16.2
16/11/2000 3:00		56.1			90	75.6	88.5	84.2	90.6	16.2
16/11/2000 4:00					88	68.0	88.3	75.9	89.5	16.3
16/11/2000 5:00					86	64.2	88.0	74.4	88.8	16.4
16/11/2000 6:00					83	84.1	87.3	85.5	86.4	
16/11/2000 7:00					80	85.0	87.9	85.3	86.2	
16/11/2000 8:00					78	85.2	88.3	85.6	86.4	
16/11/2000 9:00					77	85.5	88.2	85.8	86.7	
16/11/2000 10:00					76	85.8	88.2	86.1	87.0	
16/11/2000 11:00		88.7			76	81.6	87.7	86.3	87.1	
16/11/2000 12:00		7.5			75	72.5	88.4	78.0	86.2	
16/11/2000 13:00					73	67.4	88.7	72.4	76.4	
16/11/2000 14:00					71	63.0	89.0	77.9	81.8	
16/11/2000 15:00	62.2				70	80.3	89.0	80.7	81.5	
16/11/2000 16:00					69	80.1	88.9	80.5	81.4	
16/11/2000 17:00					69	80.4	89.0	80.8	81.6	
16/11/2000 18:00					68	80.7	89.0	81.1	81.9	

62.2

17.3

Assuming 40% only

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
15/11/2000 18:00:00	tons	tons	tons	%	%	%	%	%
15/11/2000 18:00:00	9346.0	1348.3	8298.0	92.2	49.8	90.4	24.9	69.5
16/11/2000	9338.1	2686.3	7306.2	92.2	79.2	90.6	33.4	46.2
Change	-7.9	1338.0	-991.8	-0.1	29.5	0.2	8.5	-23.2
			19330.6			29.7		-14.8

24 Hour Production Figures

Rock Consumed	6689 tonnes	23.9% P2O5 @
H2SO4 Consumed	1649 m3	
Intermediate Acid	1858 m3	41% P2O5 @
Weak Acid	178 m3	27.3% P2O5 @
Interm. Acid evap.	1051 m3	
Strong Acid produced	737 m3	52% P2O5 @
HH Cake produced	6922 tonnes	3.11% P2O5 @
Waste Water	3828 m3	1.53% P2O5 @
Steam Consumed	399 tonnes	
Process Water	tonnes	

Key Performance

t Rock / t P2O5	4.4
t H2SO4 / t P2O5	2.40 (as 100% sulphuric acid)
t Steam/t 52% P2O5	0.62

Calculated Efficiencies

%P2O5 loss	16.2%	16.3%
%P2O5 losses calc.	218.6 tons to gypsum & wastewater	

Simplified

Note: Only current if HH cake produced

			%P2O5 lossEfficiency	
A	23.92 % P2O5 in rock	Simplified	16.28	83.72
B	31.66 % CaO in rock	Actual	16.22	83.78
C	40.72 % P2O5 in product acid (average value)			
D	0.24 % CaO in product acid (average value)			
E	3.11 % P2O5 (total) in dry HH cake			
F	25.31 % CaO in dry HH cake			
			%P2O5 lossEfficiency	
A	23.92 % P2O5 in rock	Simplified	16.28	83.72
B	31.66 % CaO in rock	Actual	16.22	83.78
C	41.47 % P2O5 in product acid (average value)			
D	0.23 % CaO in product acid (average value)			
E	3.11 % P2O5 (total) in dry HH cake			
F	25.31 % CaO in dry HH cake			

NOVEMBER 2000 – BOTTOM LEFT

16/11/2000 18:00														
Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	% P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
34.7	23.9	79.3	30.7	95.9	95.7	Level new	33.4	46.2	15.5	23.3	91.1	48.7	72.0	
15.5	23.3	91.1	48.7	72.0	83.9	Level old	24.9	69.5	34.7	23.9	79.3	30.7	95.9	
-19.2	-0.6	11.8	18.0	-23.9	-11.9	P ₂ O ₅ total old	100.4	280.1	337.2	232.9	771.5	428.2	1337.3	3487.7
		-8.0		-5.9		P ₂ O ₅ total new	134.5	186.5	150.4	227.0	886.4	679.7	1004.0	3268.5
Production if Granulation offline														-219.2
						P2O5	days		sg	P ₂ O ₅	No Tanks		P ₂ O ₅	
						Weak Acid	321	1.5	20%	1.26	403	2	806	0.398
						Intermediate Acid	1,264	2.0	40%	1.52	973	3	2918	0.433
						Strong Acid	1,684	2.4	52%	1.68	1394	2	2789	0.604
						P2O5 total	3,268						6514	50.17900526
						<u>Production Used by Granulation</u>			Conc.		Total			
								m3	P2O5	sg	P2O5			
						Weak Acid		570.0	20%	1.26	144			
						Intermediate Acid		618.5	40%	1.52	376			
						Strong Acid		684.2	52%	1.68	596			
											1116	tpd		
						Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
						Weak		0.065	8.8	210.6	13.9%		135	3240
						Intermediate		0.191	25.8	618.84	40.7%			
						Strong		0.213	28.8	690.12	45.4%			
								0.469	63.315	1519.56	100%			
								m3						
						Weak			34.8					
						Intermediate			42.4					
						Strong			33.0					
Amount of P2O5 contained in all 7 storage tanks when full														
Description						Storage		sg	Acid	P ₂ O ₅				
						m ³		t/m ³	tons	tons				
Weak Acid						3200		1.26	4032	806.4				
Intermediate Acid						4800		1.52	7296	2918.4				
Strong Acid						3200		1.676	5363	2788.9				
										6513.7				
Acid consumption						2.6t (100% H ₂ SO ₄) per t P ₂ O ₅								
Tons H ₂ SO ₄ required						16936 tons as 100% sulphuric acid								
Tons H ₂ SO ₄ required						17193 tons as 98.5% sulphuric acid								

NOVEMBER 2000 – BOTTOM RIGHT

12/12/2000 18:00Start Time

13/12/2000 18:00Finish Time

Clear

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry Filter No. 1 sg	Rock Slurry Filter No. 2 sg	Rock Feed (weighbelt)	Reactor 1A agitator amps	Reactor 1B agitator amps	Reactor 1C agitator amps	Reactor 2 agitator amps	H ₂ SO ₄ to Acid Mixer B (FIC25001)	H ₂ SO ₄ to Acid Mixer A (FIC25002)	Recirculation Slurry (FIC25003)	Reactor 2 Temperature (TI25004)	Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)	Reactor 2 Level (LI25001)	Return Acid Mixer A (FIC30004)	Return Acid Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
12/12/2000 18:00:00	1.66	1.67	330.5	248.0	313.0	136.8	39.0	37.0	37.0	2377.9	96.4	52.9	50.8	74.3	173.0	173.2	130.3	129.5	129.9	134.9
12/12/2000 19:00	1.67	1.67	330.3	252.5	313.0	133.8	40.0	37.0	37.1	2374.9	96.5	53.2	51.2	73.5	172.8	173.0	129.8	129.7	130.0	135.1
12/12/2000 20:00	1.67	1.68	333.5	253.5	303.5	136.6	38.5	37.0	37.0	2375.9	96.8	53.5	52.2	72.7	172.9	173.0	129.9	130.0	129.6	135.4
12/12/2000 21:00	1.70	1.69	322.2	254.0	313.0	140.0	37.5	37.0	37.0	2376.7	97.0	53.7	52.5	71.9	172.9	173.2	129.7	130.0	129.7	134.8
12/12/2000 22:00	1.69	1.67	316.9	250.0	317.5	136.1	40.0	37.0	37.0	2375.9	96.9	53.8	52.2	70.5	173.1	172.9	130.2	130.0	129.8	135.2
12/12/2000 23:00	1.69	1.68	315.7	259.0	310.5	137.6	35.0	37.2	37.2	2374.6	97.3	53.8	52.0	69.0	172.9	172.9	129.9	129.5	129.8	134.8
13/12/2000 0:00	1.69	1.67	322.2	251.0	307.5	135.1	36.5	37.6	37.6	2378.5	98.6		53.0	68.5	172.5	173.2	132.0	134.8	131.9	135.3
13/12/2000 1:00	1.69	1.68	328.5	251.0	316.0	140.0	35.5	48.7	48.7	2377.3	97.8	52.2	51.9	68.7	172.6	173.1	133.9	134.3	133.7	134.8
13/12/2000 2:00	1.57	1.45	333.5	246.5	313.0	139.2	39.0	40.2	40.2	2378.4	99.3	87.7	52.8	66.0	173.5	173.1	140.2	140.2	139.8	140.3
13/12/2000 3:00			0.1	335.5	327.0	141.0	37.0			2000.6	98.8			83.7	0.9		90.3	115.7	7.8	
13/12/2000 4:00			0.1	336.5	334.0	137.6	38.0			1995.8	98.2			83.7			90.0	116.1	5.5	
13/12/2000 5:00			0.1	330.0	331.0	141.5	36.0			1996.5	97.6			83.7			92.5	116.2	7.7	
13/12/2000 6:00			0.0	330.0	324.5	141.6	36.5			2001.8	97.1			83.7			88.8	117.6		
13/12/2000 7:00			0.1	335.5	320.5	146.1	38.5			2001.4	96.5			83.7			91.2	119.5	17.4	
13/12/2000 8:00			0.1	330.0	330.0	140.0	36.5			2003.6	95.9			83.7			90.2	119.7		
13/12/2000 9:00			0.1	338.5	334.0	143.0	38.0			1989.4	95.4			83.7	1.1		90.6	119.8		
13/12/2000 10:00			0.1	331.5	330.0	139.9	38.0			1997.5	94.8			83.7		0.7	91.0	119.9	4.3	
13/12/2000 11:00			0.1	330.0	337.0	136.4	37.5			2010.8	94.2			83.7			91.0	121.2	2.8	
13/12/2000 12:00			0.1	335.5	332.5	139.5	38.0			2005.9	93.7			83.7			90.7	121.4	5.0	
13/12/2000 13:00			0.1	332.5	321.5	149.4	34.5			2004.2	93.2			83.7			92.5	121.1	0.2	
13/12/2000 14:00			0.1	332.5	325.5	147.3	38.0			1988.2	92.7			83.7			93.7	122.1	7.4	
13/12/2000 15:00			0.1	328.5	329.0	136.8	38.5			2004.9	92.3			83.7			92.1	122.9	10.6	
13/12/2000 16:00			0.2	330.0	330.0	150.0	39.5			2000.9	91.9			83.7			92.8	123.5	9.1	
13/12/2000 17:00			0.2	338.0	327.0	141.6	38.0			2011.6	91.4			83.7			93.4	123.3	3.6	
13/12/2000 18:00			0.2	334.0	332.5	144.9	38.5			2009.2	90.7			83.7			93.3	123.9	15.7	
Total for shift			6689						1649	2126.4										

DECEMBER 2000 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production	
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV		
m³/h	m³/h	m³/h	m³/h	t/h	m³/h																
32.4	32.3	32.2	33.9	329.9	204	14.3	99.0	95.9	97.8	88.0	72.4	68.8	95.7	94.3	89.0	87.2	38.3	90.9	62.1	92%	
32.2	32.4	32.3	33.8	327.5	135	29.3	99.4	96.1	97.8	87.9	72.4	72.0	95.7	94.3	92.5	88.0	29.6	91.1	69.3	92%	
32.4	32.3	32.3	34.0	330.6	189	0.3	99.3	96.0	97.9	88.1	72.4	75.0	95.8	94.3	93.3	88.9	20.7	91.5	76.0	93%	
32.2	31.8	32.0	33.1	337.0	180	0.2	99.8	96.4	98.2	88.1	72.5	78.0	96.0	94.4	95.5	89.8	18.1	84.6	83.7	89%	
31.9	31.9	32.0	33.0	331.4	261	11.3	100.8	97.0	98.5	88.1	72.6	80.8	96.0	94.4	91.6	90.5	18.7	76.0	90.4	88%	
31.9	31.9	32.0	33.1	334.9	258	34.3	100.1	96.7	98.6	88.1	72.6	83.3	96.1	94.4	93.2	91.5	25.1	67.1	90.4	88%	
32.0	32.0	31.9	32.9	328.3	271	36.3	100.2	96.9	98.8	88.1	72.5	85.7	96.3	94.4	93.0	92.2	25.9	58.0	90.4	90%	
32.0	31.9	32.0	33.0	343.9	193	52.6	101.2	97.9	99.9	88.1	71.1	85.9	96.3	94.4	92.6	92.2	29.4	49.1	90.4	91%	
32.4	32.4	32.3	33.6	364.2	233	69.4	101.2	97.8	99.7	88.1	69.9	87.1	96.3	94.4	92.5	92.2	29.7	40.4	90.4	93%	
		32.3	15.6	1.2		0.2	100.1	96.5	99.1	88.1	68.7	83.4	96.4	94.4	92.7	92.2	32.5	40.4	90.7	0%	
			15.5	1.2	11	0.2	99.9	96.3	98.5	88.1	67.7	79.3	96.4	94.4	92.9	92.0	39.8	40.4	90.7	0%	
			15.8	1.2	4	0.2	100.2	96.4	98.0	88.1	67.7	76.8	96.3	94.4	92.6	92.7	47.7	40.4	90.8	0%	
	0.0		15.8	1.1		0.2	100.4	96.6	97.5	88.1	67.7	75.3	96.3	94.4	94.1	93.4	55.4	40.3	90.8	0%	
	0.0		15.7	1.1	7	0.2	100.2	96.3	96.9	88.1	67.9	74.5	96.3	94.4	95.4	93.9	62.8	40.5	90.9	0%	
			15.7	1.1		0.2	100.0	95.9	96.4	88.1	67.7	74.4	96.3	94.4	95.5	93.9	69.9	40.5	90.9	0%	
			15.1	1.2	134	0.2	98.5	94.7	95.7	88.1	67.7	74.1	96.3	94.4	95.5	94.0	75.9	40.5	91.0	0%	
15.4	17.8		14.9	1.2	53	0.2	98.4	94.6	95.2	88.1	67.6	72.1	96.3	94.4	95.4	93.8	83.2	40.5	91.0	0%	
15.6	17.6		14.7	1.2	48	0.2	98.2	94.2	94.6	88.1	66.2	69.0	96.2	94.3	94.7	93.2	90.7	40.3	91.2	0%	
16.2	17.7		16.1	1.2	41	0.2	98.1	94.0	94.2	88.1	65.8	66.5	96.2	94.3	95.5	93.6	96.1	42.6	91.3	0%	
16.1	17.9		16.1	1.2	31	0.2	97.9	93.6	93.7	88.1	65.9	64.4	96.2	94.3	96.2	94.5	96.1	49.8	91.4	0%	
16.2	17.9		16.1	1.2	103	0.2	99.9	94.9	93.5	88.1	65.9	62.4	96.2	94.3	97.2	95.5	96.1	56.6	91.5	0%	
16.1	17.7		16.0	1.3	29	0.2	99.4	94.3	92.9	87.9	65.8	60.9	96.3	94.3	98.1	96.1	96.2	63.7	91.5	0%	
16.2	17.5		16.0	1.3	31	0.2	98.1	93.4	92.4	87.9	65.3	58.3	96.2	94.4	97.8	96.0	96.0	70.7	91.5	0%	
16.1	17.7		15.9	1.4	24	0.2	98.3	93.3	92.0	87.9	64.0	54.3	96.2	94.3	98.4	95.2	96.2	77.9	91.6	0%	
16.3	17.9		16.1	1.3	105	0.2	95.8	92.0	91.2	88.0	62.5	51.1	96.2	94.3	98.4	94.4	96.1	85.0	91.6	0%	
					3828																
					159.5																

DECEMBER 2000 – TOP RIGHT

	40% Feed Rate	52% Prod Rate	Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
12/12/2000 18:00:00	43.2	25.1	19.5	393	107	88.3	18.1	90.3	89.4	5.9
12/12/2000 19:00	46.5	29.2	19.5	391	107	88.8	18.2	90.4	89.5	5.8
12/12/2000 20:00	45.9	30.7	19.5	392	106	87.6	18.3	89.8	88.9	5.8
12/12/2000 21:00	42.8	30.7	19.5	388	106	87.7	18.1	90.1	89.2	5.7
12/12/2000 22:00	46.0	28.1	19.5	386	107	88.5	18.4	90.3	89.5	5.7
12/12/2000 23:00	47.2	35.2	19.4	370	106	87.3	18.3	89.7	88.9	5.7
13/12/2000 0:00	42.1	29.6	19.6	362	106	87.5	18.1	89.4	88.6	5.7
13/12/2000 1:00	42.8	26.8	19.5	362	107	88.5	18.5	90.3	89.5	5.7
13/12/2000 2:00	44.2	28.4	19.4	361	106	88.1	18.6	90.1	89.3	5.6
13/12/2000 3:00	44.5	26.2	19.4	413	108	88.7	18.3	90.4	89.5	5.5
13/12/2000 4:00	48.0	32.8	19.5	413	107	88.2	18.5	90.0	89.1	5.5
13/12/2000 5:00	55.9	32.7	19.5	412	109	89.8	18.3	91.7	90.8	5.6
13/12/2000 6:00		0.6		479	102	93.2	18.3	93.8	94.5	6.9
13/12/2000 7:00				430	100	85.9	18.4	86.2	87.0	6.9
13/12/2000 8:00				430	100	85.4	18.4	85.8	86.6	6.9
13/12/2000 9:00			7.0	426	108	88.0	18.4	89.4	89.5	8.5
13/12/2000 10:00			11.0	390	108	87.2	18.4	88.8	88.4	10.2
13/12/2000 11:00	29.4	11.9	13.2	363	111	89.5	18.4	91.5	90.9	10.3
13/12/2000 12:00		32.7	14.4	393	112	90.2	18.3	92.4	91.8	10.1
13/12/2000 13:00	34.9	31.6	14.5	391	111	87.9	18.4	91.5	90.8	10.2
13/12/2000 14:00	34.3	32.7	14.5	419	110	86.6	18.3	90.4	89.8	9.9
13/12/2000 15:00			12.6	422	110	87.9	18.3	92.1	91.6	9.2
13/12/2000 16:00	34.5		8.5	383	106	86.8	18.4	90.3	90.2	8.7
13/12/2000 17:00			8.4	382	102	85.0	18.4	86.4	86.3	9.2
13/12/2000 18:00	24.9	14.8	12.0	392	106	88.2	18.4	89.7	89.3	9.8
	32.2		15.9							

Assuming 40% only

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
12/12/2000 18:00:00	tons	tons	tons	%	%	%	%	%
	2594.7	2892.9	4626.3	38.3	90.9	62.1	88.0	72.4
13/12/2000	2327.2	4428.9	4554.1	96.1	85.0	91.6	88.0	62.5
Change	-267.5	1536.0	-72.2	57.9	-5.9	29.5	0.0	-9.9
			11310.3			23.6		-9.9

24 Hour Production Figures

Rock Consumed	6689tonnes	22.0% P2O5 @	20.3% moisture
H2SO4 Consumed	1649 m3		1.83 sg
Intermediate Acid	1858 m3	38% P2O5 @	1.48 sg
Weak Acid	178 m3	25.1% P2O5 @	1.33 sg
Interm. Acid evap.	1051 m3		
Strong Acid produced	737 m3	53% P2O5 @	1.70 sg
HH Cake produced	6922 tonnes	1.57% P2O5 @	23.7% moisture
Waste Water	3828 m3	0.99% P2O5 @	
Steam Consumed	399 tonnes		
Process Water	tonnes		
Key Performance			
t Rock / t P2O5	4.8		
t H2SO4 / t P2O5	2.67 (as 100% sulphuric acid)		
t Steam/t 52% P2O5	0.60		

Calculated Efficiencies

%P2O5 loss	8.2%	8.2%	Note: Only current if HH cake produced
%P2O5 losses calc.	120.9tons to gypsum & wastewater		

			%P2O5 lossEfficiency
A	21.96 % P2O5 in rock	Simplified	8.22 91.78
B	28.94 % CaO in rock	Actual	8.18 91.82
C	37.50 % P2O5 in product acid (average value)		
D	0.27 % CaO in product acid (average value)		
E	1.57 % P2O5 (total) in dry HH cake		
F	25.16 % CaO in dry HH cake		
			%P2O5 lossEfficiency
A	21.96 % P2O5 in rock	Simplified	8.22 91.78
B	28.94 % CaO in rock	Actual	8.19 91.81
C	38.20 % P2O5 in product acid (average value)		
D	0.26 % CaO in product acid (average value)		
E	1.57 % P2O5 (total) in dry HH cake		
F	25.16 % CaO in dry HH cake		

DECEMBER 2000 – BOTTOM LEFT

13/12/2000 18:00

Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%		P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
68.8	95.7	94.3	89.0	87.2	73.2	Level new	88.0	62.5	51.1	96.2	94.3	98.4	94.4	
51.1	96.2	94.3	98.4	94.4	56.9	Level old	88.0	72.4	68.8	95.7	94.3	89.0	87.2	
-17.8	0.6	-0.1	9.4	7.3	-16.3	P ₂ O ₅ total old	354.7	292.0	669.6	930.9	917.7	1240.7	1215.6	5621.3
		-17.3		16.7		P ₂ O ₅ total new	354.6	252.1	496.6	936.3	917.1	1371.8	1316.8	5645.3

Production if Granulation offline	24.0
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			P2O5	days		sg	P2O5	No Tanks	P2O5		
	1171.4	tons P ₂ O ₅	Weak Acid	607	2.9	20%	1.26	403	2	806	0.752
	3017.5	tons sulphuric acid (98.5%)	Intermediate Acid	2,350	3.8	40%	1.52	973	3	2918	0.805
1052.0			Strong Acid	2,689	3.9	52%	1.68	1394	2	2789	0.964
59.4	1111.4	tons 20% & 40% P ₂ O ₅ produced	P2O5 total	5,645						6514	86.66889082

666.2	tons 52% P ₂ O ₅ produced	<u>Production Used by Granulation</u>			Conc.	Total
82.9	tons P ₂ O ₅ lost in HH filter cake		m3	P2O5	sg	P2O5
38.0	tons P ₂ O ₅ lost in waste water	Weak Acid	570.0	20%	1.26	144
		Intermediate Acid	618.5	40%	1.52	376
		Strong Acid	684.2	52%	1.68	596
						1116tpd

		Granulation	split	tph P205	tpd P205	Ratio	tph DAP	tpd DAP	
91.8%	Filter Recovery Efficiency (Simplified HFT method)	Weak		0.065	8.8	210.6	13.9%	135	3240
		Intermediate		0.191	25.8	618.84	40.7%		
		Strong		0.213	28.8	690.12	45.4%		
				0.469	63.315	1519.56	100%		

91.8%	Filter Recovery Efficiency (Simplified HFT method)	0.469	63.315	1519.56	100%
94.9%	Acid produced to Rock Input Efficiency				
89.7%	Input - Losses Efficiency				
		m3			
	Weak		34.8		
	Intermediate		42.4		
	Strong		33.0		

Amount of P2O5 contained in all 7 storage tanks when full

Description	Storage	sg	Acid	P ₂ O ₅
	m ³	t/m ³	tons	tons
Weak Acid	3200	1.26	4032	806.4
Intermediate Acid	4800	1.52	7296	2918.4
Strong Acid	3200	1.676	5363	<u>2788.9</u>
				6513.7

Acid consumption	2.6t (100% H ₂ SO ₄) per t P ₂ O ₅
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Tons H ₂ SO ₄ required	16936 tons as 100% sulphuric acid
Tons H ₂ SO ₄ required	17193 tons as 98.5% sulphuric acid

DECEMBER 2000 – BOTTOM RIGHT

16/01/2001 18:00Start Time

17/01/2001 18:00Finish Time

Clear

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry	Rock Slurry	Rock Feed	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid	H ₂ SO ₄ to Acid	Recirculation	Reactor 2	Cooler	Cooler	Reactor 2	Return Acid	Return Acid	HH Filter Feed			
	Filter No. 1 sg	Filter No. 2 sg	(weighbelt)	agitator amps	agitator amps	agitator amps	agitator amps	Mixer B (FIC25001)	Mixer A (FIC25002)	Slurry (FIC25003)	Temperature (TI25004)	Vacuum A (PI25002)	Vacuum B (PI25003)	Level (LI25001)	Mixer A (FIC30004)	Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
16/01/2001 18:00:00	1.64	1.62	273.7	247.0	309.0	104.0	37.0	21.1	42.0	1979.3	96.0	51.9	51.6	77.9	200.0	100.4	159.9	159.7	99.7	150.1
16/01/2001 19:00	1.64	1.62	274.8	245.5	313.5	106.1	38.0	21.9	42.8	1976.7	97.0	52.5	52.1	79.0	200.0	99.9	145.2	160.3	100.4	154.9
16/01/2001 20:00	1.63	1.61	326.6	247.0	306.5	104.4	38.5	42.5	42.8	2577.2	98.6	52.8	52.6	74.4	194.1	194.1	145.4	150.0	129.7	155.1
16/01/2001 21:00	1.63	1.61	351.1	234.0	316.0	109.2	38.5	55.3	55.2	2576.4	98.9	52.9	53.0	74.1	193.8	193.9	149.8	149.8	149.8	150.1
16/01/2001 22:00	1.63	1.61	353.4	229.0	310.0	106.0	37.5	43.1	43.3	2577.4	97.3	52.0	51.6	69.6	194.3	193.8	149.9	150.0	149.9	149.8
16/01/2001 23:00	1.62	1.60	342.7	238.0	309.0	103.7	37.5	45.2	45.2	2578.1	98.5	51.7	51.9	72.2	194.8	194.0	149.8	150.6	139.7	149.9
17/01/2001 0:00	1.62	1.59	336.8	231.5	313.0	104.7	38.5	45.3	45.2	2477.0	97.8	50.9	51.1	60.8	194.0	194.3	139.8	140.3	139.8	140.1
17/01/2001 1:00	1.61	1.59	338.3	234.0	306.5	100.2	38.0	42.6	42.5	2438.7	97.8	51.0	51.1	62.3	183.7	183.9	139.9	140.2	140.0	139.9
17/01/2001 2:00	1.61	1.59	332.9	238.0	298.0	105.1	36.0	42.6	42.5	2441.9	97.8	51.3	51.0	62.9	183.9	184.0	137.0	137.3	136.5	137.0
17/01/2001 3:00	1.61	1.59	313.6	240.0	308.0	102.2	37.0	35.6	35.5	2261.6	97.5	51.2	51.0	65.3	163.3	163.3	123.6	123.6	123.1	122.9
17/01/2001 4:00	1.61	1.59	313.4	242.5	314.5	101.8	38.0	35.6	35.5	2172.6	96.9	51.7	51.0	65.8	163.1	163.2	123.1	122.6	122.9	122.7
17/01/2001 5:00	1.60	1.58	304.5	242.5	305.0	106.6	35.5	47.2	25.9	2169.0	96.8	52.1	51.6	69.2	108.7	218.0	85.7	161.1	161.1	161.0
17/01/2001 6:00	1.60	1.58	304.0	238.0	317.5	108.4	39.0	47.5	26.4	2173.5	96.9	52.2	51.8	74.4	109.5	217.8	84.7	164.2	164.0	163.9
17/01/2001 7:00		1.60	153.9	266.0	314.5	104.9	37.5	46.3		1373.9	96.3	54.6	51.2	74.4	1.3	190.2	84.6	119.6	163.9	164.0
17/01/2001 8:00		1.65	192.1	259.0	317.5	108.0	36.0	45.0		1352.2	95.9	54.3	50.9	72.5	0.4	189.9	85.2	115.8	137.4	159.9
17/01/2001 9:00		1.66	195.6	246.5	316.5	106.1	37.5	48.3		1451.9	97.9	53.4		76.7	91.0	200.0	84.7	85.2	170.0	170.2
17/01/2001 10:00			1.1	314.5	313.0	104.6	38.0			1.8	96.6			87.6			84.4	85.1	119.9	119.9
17/01/2001 11:00			1.1	323.5	314.5	107.9	39.0				95.8			88.5			85.6	85.3	120.0	119.6
17/01/2001 12:00			0.9	321.5	319.0	104.4	36.0			2022.9	95.1			89.2		5.1	86.5	82.5	120.2	120.2
17/01/2001 13:00	1.71	1.69	271.2	241.0	311.5	100.4	36.0	44.0	21.9	1981.7	96.9	54.6	55.1	72.9	109.8	160.2	130.1	0.1	145.1	144.9
17/01/2001 14:00	1.71	1.69	304.2	237.0	307.5	109.4	36.5	52.3	29.8	2110.5	97.8	54.4	55.6	71.9	99.5	179.7	130.0	0.2	154.0	154.0
17/01/2001 15:00	1.71	1.68	326.9	241.0	295.0	104.1	35.5	40.2	40.0	2376.3	98.2	53.2	54.5	69.5	159.7	159.9	120.4	119.8	135.0	135.0
17/01/2001 16:00	1.71	1.68	314.4	238.0	309.0	105.8	36.5	40.3	40.4	2375.7	98.3	52.3	53.6	68.9	159.7	160.3	119.9	119.8	124.7	125.0
17/01/2001 17:00	1.70	1.67	321.3	246.5	313.0	103.2	37.5	43.9	41.8	2375.8	98.2	52.0	53.5	69.3	159.9	160.0	119.9	119.8	124.9	124.9
17/01/2001 18:00	1.70	1.67	316.9	244.0	300.5	107.4	37.5	41.4	41.3	2375.0	98.7	51.9	53.7	69.9	160.3	160.0	120.0	119.7	125.0	124.7
Total for shift			6245						1574	2096.4										

JANUARY 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
37.8	38.1	21.1	37.9	373.4	145	50.9	95.4	94.1	96.1	24.8	29.2	32.9	17.8	9.6	8.6	25.3	12.9	9.9	69.9	76%
38.2	38.0	22.0	37.9	336.1	145	50.4	97.0	95.3	97.0	23.3	29.2	34.9	18.0	9.5	8.1	23.0	12.5	10.1	70.2	76%
38.0	37.9	38.2	38.0	434.0	217	43.3	99.8	97.0	98.0	21.6	29.3	36.9	18.4	9.4	7.6	22.3	12.2	10.0	70.4	91%
39.3	39.2	39.2	39.1	425.9	182	46.4	100.0	97.5	99.2	19.9	29.2	38.2	18.7	9.4	7.6	22.6	11.8	10.4	68.7	98%
37.1	37.0	36.9	37.0	433.7	182	32.9	100.9	97.3	99.7	17.9	29.3	40.9	18.9	9.5	7.4	22.0	12.2	11.0	66.2	98%
37.1	37.0	37.0	37.0	425.1	237	27.3	101.1	98.3	99.8	16.4	29.1	41.6	19.1	9.6	7.4	22.0	12.2	11.1	63.7	95%
35.1	35.0	35.0	34.9	382.2	225	50.4	101.2	97.3	99.1	14.2	29.2	43.5	19.1	10.0	7.2	22.8	12.1	11.0	64.8	94%
34.0	34.0	34.0	34.1	373.7	215	49.5	100.7	97.7	99.3	12.3	29.1	45.1	19.2	9.9	7.1	22.5	11.8	11.1	62.4	94%
34.1	33.9	34.0	34.0	363.9	252	50.3	100.7	97.7	99.5	16.3	24.5	46.6	19.2	10.1	7.0	22.3	11.3	11.1	60.4	92%
29.9	30.0	30.0	30.0	368.8	226	50.4	99.7	97.2	99.4	25.4	19.1	47.0	19.5	10.2	6.9	23.1	11.4	11.0	59.1	87%
30.0	30.0	29.9	30.0	342.4	165	50.0	98.8	96.4	98.8	29.5	17.4	45.0	19.8	10.1	6.9	23.5	11.9	10.9	58.4	87%
15.4	39.0	39.0	39.1	317.5	235	50.8	97.6	95.6	98.3	32.7	15.5	40.9	19.6	10.2	6.9	23.2	11.9	10.8	58.0	85%
15.9	39.1	39.0	39.0	338.5	116	32.3	97.1	95.5	98.3	32.4	13.9	39.8	19.5	10.0	6.9	23.2	11.9	15.4	53.2	84%
24.5	27.0	37.0	37.0	224.4	143	0.2	96.9	95.4	98.1	32.4	12.3	38.8	19.6	10.0	6.9	23.7	11.8	24.5	47.3	43%
24.1	1.2	37.0	37.0	216.8	178	1.2	96.6	94.7	97.4	32.5	10.5	37.2	19.8	10.2	7.3	24.2	11.8	30.3	43.5	53%
24.5	0.6	38.2	38.3	233.0	246	0.3	98.2	95.9	97.3	32.0	8.0	35.2	19.4	9.2	7.8	24.1	12.2	32.3	43.2	54%
24.7	18.9	39.5	39.5		249	0.3	103.1	98.0	98.1	32.8	5.1	33.3	19.1	8.9	8.5	24.9	12.7	38.3	42.9	0%
24.9	19.1	28.2	18.9	1.6	104	0.3	102.8	97.2	97.4	31.1	5.0	27.4	19.0	8.8	8.9	25.6	13.2	51.0	42.8	0%
25.7	20.2	33.5	20.6	1.8	152	0.3	97.0	94.5	96.5	29.3	4.9	22.8	18.9	8.5	9.3	25.4	13.4	62.6	42.7	0%
36.5	15.4	34.4	34.3	289.7	163	0.6	96.7	94.8	96.2	27.8	5.0	20.7	18.9	8.7	9.5	25.8	16.0	68.9	43.0	75%
37.0	16.0	36.9	37.0	313.4	159	0.3	98.9	96.7	98.0	26.3	5.1	23.2	19.2	9.0	9.5	25.6	13.2	73.9	43.1	84%
34.1	29.9	32.3	32.3	364.9	209	1.3	101.0	98.0	99.3	24.8	5.3	25.1	20.4	10.0	9.6	26.1	13.0	77.8	43.2	91%
34.2	30.1	29.9	29.9	359.0	196	0.3	101.5	98.4	99.8	23.3	5.7	26.3	20.8	10.2	9.7	26.4	13.6	77.0	43.2	87%
34.0	30.1	30.0	29.9	362.4	200	0.3	101.9	98.7	100.1	21.7	6.6	26.5	21.1	10.6	9.7	27.1	13.8	75.1	43.3	89%
33.0	29.1	29.1	28.9	366.6	199	0.3	102.8	99.1	100.2	20.0	10.1	26.9	20.9	10.5	9.5	26.9	13.5	74.6	43.4	88%
					4744															
					197.7															

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JANUARY 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam	Desuper Steam HEX Steam		Flash Chamber	Flash Chamber	Acid Outlet		Acid Inlet		Conductivity
			Flow	Pressure	Temperature	Temperature	Pressure	Temperature	Temperature	Temperature	Temperature	
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV		
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	C	C	uS/cm
16/01/2001 18:00:00	22.0	14.0	12.1	435	101	85.1	18.8	86.6	86.4	10.7		
16/01/2001 19:00	29.0	9.5	15.9	420	108	90.6	18.9	92.7	92.1	11.6		
16/01/2001 20:00	64.8	48.2	18.0	414	108	88.8	19.1	91.0	90.2	11.3		
16/01/2001 21:00	54.7	41.7	20.7	417	107	86.4	19.2	88.8	87.8	11.7		
16/01/2001 22:00	52.4	35.3	22.1	398	110	88.7	19.5	90.7	89.7	11.0		
16/01/2001 23:00	73.6	52.0	24.0	386	112	90.0	21.1	92.2	91.1	10.7		
17/01/2001 0:00	63.0	40.6	24.0	397	110	86.2	19.6	88.2	87.0	10.5		
17/01/2001 1:00	53.5	39.7	24.0	399	111	88.4	20.2	90.7	89.5	10.6		
17/01/2001 2:00	71.2	43.6	25.0	386	113	89.4	20.7	91.7	90.5	10.3		
17/01/2001 3:00	75.9	48.0	26.0	376	112	87.8	21.1	89.8	88.6	10.3		
17/01/2001 4:00	63.2	49.6	26.0	374	111	86.6	20.5	89.1	87.9	10.2		
17/01/2001 5:00	57.0	38.8	26.0	369	112	88.2	20.0	90.6	89.4	10.3		
17/01/2001 6:00	67.9	46.4	26.0	376	113	89.1	20.2	91.2	90.0	10.1		
17/01/2001 7:00	75.5	53.4	26.0	413	114	88.3	20.6	90.5	89.2	9.9		
17/01/2001 8:00	62.0	44.2	26.0	411	113	86.5	19.5	89.0	87.6	9.8		
17/01/2001 9:00	62.3	22.0	26.0	409	115	89.1	19.5	91.3	90.0	9.9		
17/01/2001 10:00	71.9	43.1	26.0	400	113	87.9	19.3	90.1	88.8	10.0		
17/01/2001 11:00	51.3	42.3	26.1	406	114	87.3	19.5	89.9	88.6	9.9		
17/01/2001 12:00	69.2	42.1	26.1	418	115	89.0	19.5	91.1	89.7	9.7		
17/01/2001 13:00	51.7	36.9	26.0	400	114	87.4	19.7	89.8	88.5	9.8		
17/01/2001 14:00	60.4	43.2	22.9	417	112	88.6	20.2	90.9	89.8	9.8		
17/01/2001 15:00	62.5	39.4	25.0	418	113	87.5	21.5	89.9	88.7	9.9		
17/01/2001 16:00	70.4	48.8	25.5	413	114	88.4	22.5	90.7	89.4	10.1		
17/01/2001 17:00	71.0	50.9	25.5	416	113	87.4	22.6	89.2	88.0	9.7		
17/01/2001 18:00	53.0	28.6	25.5	415	115	88.5	22.0	91.1	89.8	9.6		
	61.5		23.8									

Assuming 40% only

JANUARY 2001 – BOTTOM LEFT

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
16/01/2001 18:00:00	tons	tons	tons	%	%	%	%	%
	1068.7	1767.8	1779.0	12.9	9.9	69.9	24.8	29.2
#####	2662.4	1465.0	2608.1	13.5	74.6	43.4	20.0	10.1
Change	1593.7	-302.9	829.2	0.6	64.7	-26.5	-4.9	-19.0
			6735.5			38.2		-23.9

24 Hour Production Figures			Assumptions	
Rock Consumed	6245 tonnes		24.4% P2O5 @	23.9% moisture
H2SO4 Consumed	1574 m3			1.83 sg
Intermediate Acid	2167 m3		39% P2O5 @	1.46 sg
Weak Acid	0m3		21.1% P2O5 @	1.28 sg
Intern. Acid evap.	1481 m3			
Strong Acid produced	973 m3		51% P2O5 @	1.65 sg
HH Cake produced	7383 tonnes		1.69% P2O5 @	24.1% moisture
Waste Water	4744 m3		1.35% P2O5 @	
Steam Consumed	578 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P2O5	3.9			
t H2SO4 / t P2O5	2.31 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.70			
Calculated Efficiencies			Simplified	
%P2O5 loss	8.6%	8.7%		
%P2O5 losses calc.	158.6 tons to gypsum & wastewater			
Note: Only current if HH cake produced				

%P2O5 loss Efficiency				
A	24.39 % P2O5 in rock	Simplified	8.65	91.35
B	32.97 % CaO in rock	Actual	8.61	91.39
C	38.70 % P2O5 in product acid (average value)			
D	0.29 % CaO in product acid (average value)			
E	1.69 % P2O5 (total) in dry HH cake			
F	26.34 % CaO in dry HH cake			
%P2O5 loss Efficiency				
A	24.39 % P2O5 in rock	Simplified	8.65	91.35
B	32.97 % CaO in rock	Actual	8.61	91.39
C	38.70 % P2O5 in product acid (average value)			
D	0.29 % CaO in product acid (average value)			
E	1.69 % P2O5 (total) in dry HH cake			
F	26.34 % CaO in dry HH cake			

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Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank L170002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
32.9	17.8	9.6	8.6	25.3	72.8	Level new	20.0	10.1	26.9	20.9	10.5	9.5	26.9	
26.9	20.9	10.5	9.5	26.9	31.5	Level old	24.8	29.2	32.9	17.8	9.6	8.6	25.3	
-5.9	3.1	0.9	0.9	1.5	-41.3	P ₂ O ₅ total old	100.2	117.6	319.9	173.1	93.2	119.7	352.9	1276.6
		-1.9		2.4		P ₂ O ₅ total new	80.5	40.9	262.2	203.4	102.3	132.1	374.5	1195.8

Production if Granulation offline	-80.8
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				P2O5	days		sg	P2O5	No Tanks	P2O5	
	1159.4	tons P ₂ O ₅	Weak Acid	121	0.6	20%	1.26	403	2	806	0.151
	2879.7	tons sulphuric acid (98.5%)	Intermediate Acid	568	0.9	40%	1.52	973	3	2918	0.195
1226.3			Strong Acid	507	0.7	52%	1.68	1394	2	2789	0.182
0.1	1226.3	tons 20% & 40% P ₂ O ₅ produced	P2O5 total	1,196						6514	18.358191

824.4 tons 52% P ₂ O ₅ produced
94.5 tons P ₂ O ₅ lost in HH filter cake
64.2 tons P ₂ O ₅ lost in waste water

<u>Production Used by Granulation</u>		Conc.		Total
	m3	P205	sg	P205
Weak Acid	594.6	20%	1.26	150
Intermediate Acid	278.8	40%	1.52	170
Strong Acid	907.1	52%	1.68	791
				1110tpd

Granulation	split	tph P205	tpd P205	Ratio	tph DAP	tpd DAP
Weak	0.065	8.8	210.6	13.9%	135	3240
Intermediate	0.191	25.8	618.84	40.7%		
Strong	0.213	28.8	690.12	45.4%		
	0.469	63.315	1519.56	100%		

91.3%	Filter Recovery Efficiency (Simplified HFT method)
105.8%	Acid produced to Rock Input Efficiency
86.3%	Input - Losses Efficiency

	m3	
Weak	34.8	
Intermediate	42.4	
Strong	33.0	

Amount of P2O5 contained in all 7 storage tanks when full

Description	Storage m ³	sg t/m ³	Acid tons	P ₂ O ₅ tons
Weak Acid	3200	1.26	4032	806.4
Intermediate Acid	4800	1.52	7296	2918.4
Strong Acid	3200	1.676	5363	<u>2788.9</u>
				6513.7

Acid consumption	2.6t (100% H ₂ SO ₄) per t P ₂ O ₅
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Tons H ₂ SO ₄ required	16936 tons as 100% sulphuric acid
Tons H ₂ SO ₄ required	17193 tons as 98.5% sulphuric acid

JANUARY 2001 – BOTTOM RIGHT

12/12/2000 18:00 Start Time				PHOSPHORIC ACID PLANT DAILY LOGSHEET																		
13/12/2000 18:00 Finish Time				Clear		Update		Update														
	Rock Slurry		Rock Feed (weighbelt)	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid Mixer B	H ₂ SO ₄ to Acid Mixer A	Recirculation Slurry	Reactor 2 Temperature	Cooler Vacuum A	Cooler Vacuum B	Reactor 2 Level	Return Acid Mixer A	Return Acid Mixer B	HH Filter Feed	HH Filter Feed	HH Filter Feed	HH Filter Feed		
	Filter No. 1 sg	Filter No. 2 sg		agitator amps	agitator amps	agitator amps	agitator amps	(FIC25001)	(FIC25002)	(FIC25003)	(TI25004)	(PI25002)	(PI25003)	(LI25001)	(FIC30004)	(FIC35004)	A (FIC25004)	B (FIC25005)	C (FIC25006)	D (FIC25007)		
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV		
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h		
12/12/2000 18:00:00	1.66	1.67	330.5	248.0	313.0	136.8	39.0	37.0	37.0	2377.9	96.4	52.9	50.8	74.3	173.0	173.2	130.3	129.5	129.9	134.9		
12/12/2000 19:00	1.67	1.67	330.3	252.5	313.0	133.8	40.0	37.0	37.1	2374.9	96.5	53.2	51.2	73.5	172.8	173.0	129.8	129.7	130.0	135.1		
12/12/2000 20:00	1.67	1.68	333.5	253.5	303.5	136.6	38.5	37.0	37.0	2375.9	96.8	53.5	52.2	72.7	172.9	173.0	129.9	130.0	129.6	135.4		
12/12/2000 21:00	1.70	1.69	322.2	254.0	313.0	140.0	37.5	37.0	37.0	2376.7	97.0	53.7	52.5	71.9	172.9	173.2	129.7	130.0	129.7	134.8		
12/12/2000 22:00	1.69	1.67	316.9	250.0	317.5	136.1	40.0	37.0	37.0	2375.9	96.9	53.8	52.2	70.5	173.1	172.9	130.2	130.0	129.8	135.2		
12/12/2000 23:00	1.69	1.68	315.7	259.0	310.5	137.6	35.0	37.2	37.2	2374.6	97.3	53.8	52.0	69.0	172.9	172.9	129.9	129.5	129.8	134.8		
13/12/2000 0:00	1.69	1.67	322.2	251.0	307.5	135.1	36.5	37.6	37.6	2378.5	98.6		53.0	68.5	172.5	173.2	132.0	134.8	131.9	135.3		
13/12/2000 1:00	1.69	1.68	328.5	251.0	316.0	140.0	35.5	48.7	48.7	2377.3	97.8	52.2	51.9	68.7	172.6	173.1	133.9	134.3	133.7	134.8		
13/12/2000 2:00	1.57	1.45	333.5	246.5	313.0	139.2	39.0	40.2	40.2	2378.4	99.3	87.7	52.8	66.0	173.5	173.1	140.2	140.2	139.8	140.3		
13/12/2000 3:00			0.1	335.5	327.0	141.0	37.0			2000.6	98.8			83.7	0.9		90.3	115.7	7.8			
13/12/2000 4:00			0.1	336.5	334.0	137.6	38.0			1995.8	98.2			83.7			90.0	116.1	5.5			
13/12/2000 5:00			0.1	330.0	331.0	141.5	36.0			1996.5	97.6			83.7			92.5	116.2	7.7			
13/12/2000 6:00			0.0	330.0	324.5	141.6	36.5			2001.8	97.1			83.7			88.8	117.6				
13/12/2000 7:00			0.1	335.5	320.5	146.1	38.5			2001.4	96.5			83.7			91.2	119.5	17.4			
13/12/2000 8:00			0.1	330.0	330.0	140.0	36.5			2003.6	95.9			83.7			90.2	119.7				
13/12/2000 9:00			0.1	338.5	334.0	143.0	38.0			1989.4	95.4			83.7	1.1		90.6	119.8				
13/12/2000 10:00			0.1	331.5	330.0	139.9	38.0			1997.5	94.8			83.7		0.7	91.0	119.9	4.3			
13/12/2000 11:00			0.1	330.0	337.0	136.4	37.5			2010.8	94.2			83.7			91.0	121.2	2.8			
13/12/2000 12:00			0.1	335.5	332.5	139.5	38.0			2005.9	93.7			83.7			90.7	121.4	5.0			
13/12/2000 13:00			0.1	332.5	321.5	149.4	34.5			2004.2	93.2			83.7			92.5	121.1	0.2			
13/12/2000 14:00			0.1	332.5	325.5	147.3	38.0			1988.2	92.7			83.7			93.7	122.1	7.4			
13/12/2000 15:00			0.1	328.5	329.0	136.8	38.5			2004.9	92.3			83.7			92.1	122.9	10.6			
13/12/2000 16:00			0.2	330.0	330.0	150.0	39.5			2000.9	91.9			83.7			92.8	123.5	9.1			
13/12/2000 17:00			0.2	338.0	327.0	141.6	38.0			2011.6	91.4			83.7			93.4	123.3	3.6			
13/12/2000 18:00			0.2	334.0	332.5	144.9	38.5			2009.2	90.7			83.7			93.3	123.9	15.7			
Total for shift			6689					1649	2126.4													

DECEMBER 2000 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
32.4	32.3	32.2	33.9	329.9	204	14.3	99.0	95.9	97.8	88.0	72.4	68.8	95.7	94.3	89.0	87.2	38.3	90.9	62.1	92%
32.2	32.4	32.3	33.8	327.5	135	29.3	99.4	96.1	97.8	87.9	72.4	72.0	95.7	94.3	92.5	88.0	29.6	91.1	69.3	92%
32.4	32.3	32.3	34.0	330.6	189	0.3	99.3	96.0	97.9	88.1	72.4	75.0	95.8	94.3	93.3	88.9	20.7	91.5	76.0	93%
32.2	31.8	32.0	33.1	337.0	180	0.2	99.8	96.4	98.2	88.1	72.5	78.0	96.0	94.4	95.5	89.8	18.1	84.6	83.7	89%
31.9	31.9	32.0	33.0	331.4	261	11.3	100.8	97.0	98.5	88.1	72.6	80.8	96.0	94.4	91.6	90.5	18.7	76.0	90.4	88%
31.9	31.9	32.0	33.1	334.9	258	34.3	100.1	96.7	98.6	88.1	72.6	83.3	96.1	94.4	93.2	91.5	25.1	67.1	90.4	88%
32.0	32.0	31.9	32.9	328.3	271	36.3	100.2	96.9	98.8	88.1	72.5	85.7	96.3	94.4	93.0	92.2	25.9	58.0	90.4	90%
32.0	31.9	32.0	33.0	343.9	193	52.6	101.2	97.9	99.9	88.1	71.1	85.9	96.3	94.4	92.6	92.2	29.4	49.1	90.4	91%
32.4	32.4	32.3	33.6	364.2	233	69.4	101.2	97.8	99.7	88.1	69.9	87.1	96.3	94.4	92.5	92.2	29.7	40.4	90.4	93%
		32.3	15.6	1.2		0.2	100.1	96.5	99.1	88.1	68.7	83.4	96.4	94.4	92.7	92.2	32.5	40.4	90.7	0%
			15.5	1.2	11	0.2	99.9	96.3	98.5	88.1	67.7	79.3	96.4	94.4	92.9	92.0	39.8	40.4	90.7	0%
			15.8	1.2	4	0.2	100.2	96.4	98.0	88.1	67.7	76.8	96.3	94.4	92.6	92.7	47.7	40.4	90.8	0%
	0.0		15.8	1.1		0.2	100.4	96.6	97.5	88.1	67.7	75.3	96.3	94.4	94.1	93.4	55.4	40.3	90.8	0%
	0.0		15.7	1.1	7	0.2	100.2	96.3	96.9	88.1	67.9	74.5	96.3	94.4	95.4	93.9	62.8	40.5	90.9	0%
			15.7	1.1		0.2	100.0	95.9	96.4	88.1	67.7	74.4	96.3	94.4	95.5	93.9	69.9	40.5	90.9	0%
			15.1	1.2	134	0.2	98.5	94.7	95.7	88.1	67.7	74.1	96.3	94.4	95.5	94.0	75.9	40.5	91.0	0%
15.4	17.8		14.9	1.2	53	0.2	98.4	94.6	95.2	88.1	67.6	72.1	96.3	94.4	95.4	93.8	83.2	40.5	91.0	0%
15.6	17.6		14.7	1.2	48	0.2	98.2	94.2	94.6	88.1	66.2	69.0	96.2	94.3	94.7	93.2	90.7	40.3	91.2	0%
16.2	17.7		16.1	1.2	41	0.2	98.1	94.0	94.2	88.1	65.8	66.5	96.2	94.3	95.5	93.6	96.1	42.6	91.3	0%
16.1	17.9		16.1	1.2	31	0.2	97.9	93.6	93.7	88.1	65.9	64.4	96.2	94.3	96.2	94.5	96.1	49.8	91.4	0%
16.2	17.9		16.1	1.2	103	0.2	99.9	94.9	93.5	88.1	65.9	62.4	96.2	94.3	97.2	95.5	96.1	56.6	91.5	0%
16.1	17.7		16.0	1.3	29	0.2	99.4	94.3	92.9	87.9	65.8	60.9	96.3	94.3	98.1	96.1	96.2	63.7	91.5	0%
16.2	17.5		16.0	1.3	31	0.2	98.1	93.4	92.4	87.9	65.3	58.3	96.2	94.4	97.8	96.0	96.0	70.7	91.5	0%
16.1	17.7		15.9	1.4	24	0.2	98.3	93.3	92.0	87.9	64.0	54.3	96.2	94.3	98.4	95.2	96.2	77.9	91.6	0%
16.3	17.9		16.1	1.3	105	0.2	95.8	92.0	91.2	88.0	62.5	51.1	96.2	94.3	98.4	94.4	96.1	85.0	91.6	0%
					3828															
					159.5															

DECEMBER 2000 – TOP RIGHT

	40% Feed Rate	52% Prod Rate	Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
12/12/2000 18:00:00	43.2	25.1	19.5	393	107	88.3	18.1	90.3	89.4	5.9
12/12/2000 19:00	46.5	29.2	19.5	391	107	88.8	18.2	90.4	89.5	5.8
12/12/2000 20:00	45.9	30.7	19.5	392	106	87.6	18.3	89.8	88.9	5.8
12/12/2000 21:00	42.8	30.7	19.5	388	106	87.7	18.1	90.1	89.2	5.7
12/12/2000 22:00	46.0	28.1	19.5	386	107	88.5	18.4	90.3	89.5	5.7
12/12/2000 23:00	47.2	35.2	19.4	370	106	87.3	18.3	89.7	88.9	5.7
13/12/2000 0:00	42.1	29.6	19.6	362	106	87.5	18.1	89.4	88.6	5.7
13/12/2000 1:00	42.8	26.8	19.5	362	107	88.5	18.5	90.3	89.5	5.7
13/12/2000 2:00	44.2	28.4	19.4	361	106	88.1	18.6	90.1	89.3	5.6
13/12/2000 3:00	44.5	26.2	19.4	413	108	88.7	18.3	90.4	89.5	5.5
13/12/2000 4:00	48.0	32.8	19.5	413	107	88.2	18.5	90.0	89.1	5.5
13/12/2000 5:00	55.9	32.7	19.5	412	109	89.8	18.3	91.7	90.8	5.6
13/12/2000 6:00		0.6		479	102	93.2	18.3	93.8	94.5	6.9
13/12/2000 7:00				430	100	85.9	18.4	86.2	87.0	6.9
13/12/2000 8:00				430	100	85.4	18.4	85.8	86.6	6.9
13/12/2000 9:00			7.0	426	108	88.0	18.4	89.4	89.5	8.5
13/12/2000 10:00			11.0	390	108	87.2	18.4	88.8	88.4	10.2
13/12/2000 11:00	29.4	11.9	13.2	363	111	89.5	18.4	91.5	90.9	10.3
13/12/2000 12:00		32.7	14.4	393	112	90.2	18.3	92.4	91.8	10.1
13/12/2000 13:00	34.9	31.6	14.5	391	111	87.9	18.4	91.5	90.8	10.2
13/12/2000 14:00	34.3	32.7	14.5	419	110	86.6	18.3	90.4	89.8	9.9
13/12/2000 15:00			12.6	422	110	87.9	18.3	92.1	91.6	9.2
13/12/2000 16:00	34.5		8.5	383	106	86.8	18.4	90.3	90.2	8.7
13/12/2000 17:00			8.4	382	102	85.0	18.4	86.4	86.3	9.2
13/12/2000 18:00	24.9	14.8	12.0	392	106	88.2	18.4	89.7	89.3	9.8
	32.2		15.9							

Assuming 40% only

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
12/12/2000 18:00:00	tons	tons	tons	%	%	%	%	%
	2594.7	2892.9	4626.3	38.3	90.9	62.1	88.0	72.4
13/12/2000	2327.2	4428.9	4554.1	96.1	85.0	91.6	88.0	62.5
Change	-267.5	1536.0	-72.2	57.9	-5.9	29.5	0.0	-9.9
			11310.3			23.6		-9.9

24 Hour Production Figures

Rock Consumed	6689tonnes	22.0% P2O5 @	20.3% moisture
H2SO4 Consumed	1649m3		1.83sg
Intermediate Acid	1858m3	38% P2O5 @	1.48sg
Weak Acid	178m3	25.1% P2O5 @	1.33sg
Interm. Acid evap.	1051m3		
Strong Acid produced	737m3	53% P2O5 @	1.70sg
HH Cake produced	6922tonnes	1.57% P2O5 @	23.7% moisture
Waste Water	3828m3	0.99% P2O5 @	
Steam Consumed	399tonnes		
Process Water	tonnes		
Key Performance			
t Rock / t P2O5	4.8		
t H2SO4 / t P2O5	2.67 (as 100% sulphuric acid)		
t Steam/t 52% P2O5	0.60		

Calculated Efficiencies

%P2O5 loss	8.2%	8.2%	Note: Only current if HH cake produced
%P2O5 losses calc.	120.9tons to gypsum & wastewater		

A	21.96 % P2O5 in rock	Simplified	8.22	91.78
B	28.94 % CaO in rock	Actual	8.18	91.82
C	37.50 % P2O5 in product acid (average value)			
D	0.27 % CaO in product acid (average value)			
E	1.57 % P2O5 (total) in dry HH cake			
F	25.16 % CaO in dry HH cake			
		%P2O5 lossEfficiency		
A	21.96 % P2O5 in rock	Simplified	8.22	91.78
B	28.94 % CaO in rock	Actual	8.19	91.81
C	38.20 % P2O5 in product acid (average value)			
D	0.26 % CaO in product acid (average value)			
E	1.57 % P2O5 (total) in dry HH cake			
F	25.16 % CaO in dry HH cake			

DECEMBER 2000 – BOTTOM LEFT

13/12/2000 18:00

Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	% P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
68.8	95.7	94.3	89.0	87.2	73.2	Level new	88.0	62.5	51.1	96.2	94.3	98.4	94.4	
51.1	96.2	94.3	98.4	94.4	56.9	Level old	88.0	72.4	68.8	95.7	94.3	89.0	87.2	
-17.8	0.6	-0.1	9.4	7.3	-16.3	P ₂ O ₅ total old	354.7	292.0	669.6	930.9	917.7	1240.7	1215.6	5621.3
		-17.3		16.7		P ₂ O ₅ total new	354.6	252.1	496.6	936.3	917.1	1371.8	1316.8	5645.3
Production if Granulation offline														24.0
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅	
						Weak Acid	607	2.9	20%	1.26	403	2	806	0.752
						Intermediate Acid	2,350	3.8	40%	1.52	973	3	2918	0.805
						Strong Acid	2,689	3.9	52%	1.68	1394	2	2789	0.964
						P2O5 total	5,645						6514	86.66889082
						<u>Production Used by Granulation</u>								
								m3	P2O5	sg	Total			
						Weak Acid		570.0	20%	1.26	144			
						Intermediate Acid		618.5	40%	1.52	376			
						Strong Acid		684.2	52%	1.68	596			
											1116tpd			
						Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
						Weak		0.065	8.8	210.6	13.9%		135	3240
						Intermediate		0.191	25.8	618.84	40.7%			
						Strong		0.213	28.8	690.12	45.4%			
								0.469	63.315	1519.56	100%			
								m3						
						Weak		34.8						
						Intermediate		42.4						
						Strong		33.0						
						<u>Amount of P2O5 contained in all 7 storage tanks when full</u>								
						Description	Storage	sg	Acid	P ₂ O ₅				
							m ³	t/m ³	tons	tons				
						Weak Acid	3200	1.26	4032	806.4				
						Intermediate Acid	4800	1.52	7296	2918.4				
						Strong Acid	3200	1.676	5363	2788.9				
										6513.7				
						Acid consumption		2.6 t (100% H ₂ SO ₄) per t P ₂ O ₅						
						Tons H ₂ SO ₄ required		16936 tons as 100% sulphuric acid						
						Tons H ₂ SO ₄ required		17193 tons as 98.5% sulphuric acid						

DECEMBER 2000 – BOTTOM RIGHT

16/01/2001 18:00Start Time

17/01/2001 18:00Finish Time

Clear

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry	Rock Slurry	Rock Feed	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid	H ₂ SO ₄ to Acid	Recirculation	Reactor 2	Cooler	Cooler	Reactor 2	Return Acid	Return Acid	HH Filter Feed			
	Filter No. 1 sg	Filter No. 2 sg	(weighbelt)	agitator amps	agitator amps	agitator amps	agitator amps	Mixer B (FIC25001)	Mixer A (FIC25002)	Slurry (FIC25003)	Temperature (TI25004)	Vacuum A (PI25002)	Vacuum B (PI25003)	Level (LI25001)	Mixer A (FIC30004)	Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
16/01/2001 18:00:00	1.64	1.62	273.7	247.0	309.0	104.0	37.0	21.1	42.0	1979.3	96.0	51.9	51.6	77.9	200.0	100.4	159.9	159.7	99.7	150.1
16/01/2001 19:00	1.64	1.62	274.8	245.5	313.5	106.1	38.0	21.9	42.8	1976.7	97.0	52.5	52.1	79.0	200.0	99.9	145.2	160.3	100.4	154.9
16/01/2001 20:00	1.63	1.61	326.6	247.0	306.5	104.4	38.5	42.5	42.8	2577.2	98.6	52.8	52.6	74.4	194.1	194.1	145.4	150.0	129.7	155.1
16/01/2001 21:00	1.63	1.61	351.1	234.0	316.0	109.2	38.5	55.3	55.2	2576.4	98.9	52.9	53.0	74.1	193.8	193.9	149.8	149.8	149.8	150.1
16/01/2001 22:00	1.63	1.61	353.4	229.0	310.0	106.0	37.5	43.1	43.3	2577.4	97.3	52.0	51.6	69.6	194.3	193.8	149.9	150.0	149.9	149.8
16/01/2001 23:00	1.62	1.60	342.7	238.0	309.0	103.7	37.5	45.2	45.2	2578.1	98.5	51.7	51.9	72.2	194.8	194.0	149.8	150.6	139.7	149.9
17/01/2001 0:00	1.62	1.59	336.8	231.5	313.0	104.7	38.5	45.3	45.2	2477.0	97.8	50.9	51.1	60.8	194.0	194.3	139.8	140.3	139.8	140.1
17/01/2001 1:00	1.61	1.59	338.3	234.0	306.5	100.2	38.0	42.6	42.5	2438.7	97.8	51.0	51.1	62.3	183.7	183.9	139.9	140.2	140.0	139.9
17/01/2001 2:00	1.61	1.59	332.9	238.0	298.0	105.1	36.0	42.6	42.5	2441.9	97.8	51.3	51.0	62.9	183.9	184.0	137.0	137.3	136.5	137.0
17/01/2001 3:00	1.61	1.59	313.6	240.0	308.0	102.2	37.0	35.6	35.5	2261.6	97.5	51.2	51.0	65.3	163.3	163.3	123.6	123.6	123.1	122.9
17/01/2001 4:00	1.61	1.59	313.4	242.5	314.5	101.8	38.0	35.6	35.5	2172.6	96.9	51.7	51.0	65.8	163.1	163.2	123.1	122.6	122.9	122.7
17/01/2001 5:00	1.60	1.58	304.5	242.5	305.0	106.6	35.5	47.2	25.9	2169.0	96.8	52.1	51.6	69.2	108.7	218.0	85.7	161.1	161.1	161.0
17/01/2001 6:00	1.60	1.58	304.0	238.0	317.5	108.4	39.0	47.5	26.4	2173.5	96.9	52.2	51.8	74.4	109.5	217.8	84.7	164.2	164.0	163.9
17/01/2001 7:00		1.60	153.9	266.0	314.5	104.9	37.5	46.3		1373.9	96.3	54.6	51.2	74.4	1.3	190.2	84.6	119.6	163.9	164.0
17/01/2001 8:00		1.65	192.1	259.0	317.5	108.0	36.0	45.0		1352.2	95.9	54.3	50.9	72.5	0.4	189.9	85.2	115.8	137.4	159.9
17/01/2001 9:00		1.66	195.6	246.5	316.5	106.1	37.5	48.3		1451.9	97.9	53.4		76.7	91.0	200.0	84.7	85.2	170.0	170.2
17/01/2001 10:00			1.1	314.5	313.0	104.6	38.0			1.8	96.6			87.6			84.4	85.1	119.9	119.9
17/01/2001 11:00			1.1	323.5	314.5	107.9	39.0				95.8			88.5			85.6	85.3	120.0	119.6
17/01/2001 12:00			0.9	321.5	319.0	104.4	36.0			2022.9	95.1			89.2		5.1	86.5	82.5	120.2	120.2
17/01/2001 13:00	1.71	1.69	271.2	241.0	311.5	100.4	36.0	44.0	21.9	1981.7	96.9	54.6	55.1	72.9	109.8	160.2	130.1	0.1	145.1	144.9
17/01/2001 14:00	1.71	1.69	304.2	237.0	307.5	109.4	36.5	52.3	29.8	2110.5	97.8	54.4	55.6	71.9	99.5	179.7	130.0	0.2	154.0	154.0
17/01/2001 15:00	1.71	1.68	326.9	241.0	295.0	104.1	35.5	40.2	40.0	2376.3	98.2	53.2	54.5	69.5	159.7	159.9	120.4	119.8	135.0	135.0
17/01/2001 16:00	1.71	1.68	314.4	238.0	309.0	105.8	36.5	40.3	40.4	2375.7	98.3	52.3	53.6	68.9	159.7	160.3	119.9	119.8	124.7	125.0
17/01/2001 17:00	1.70	1.67	321.3	246.5	313.0	103.2	37.5	43.9	41.8	2375.8	98.2	52.0	53.5	69.3	159.9	160.0	119.9	119.8	124.9	124.9
17/01/2001 18:00	1.70	1.67	316.9	244.0	300.5	107.4	37.5	41.4	41.3	2375.0	98.7	51.9	53.7	69.9	160.3	160.0	120.0	119.7	125.0	124.7
Total for shift			6245						1574	2096.4										

JANUARY 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
37.8	38.1	21.1	37.9	373.4	145	50.9	95.4	94.1	96.1	24.8	29.2	32.9	17.8	9.6	8.6	25.3	12.9	9.9	69.9	76%
38.2	38.0	22.0	37.9	336.1	145	50.4	97.0	95.3	97.0	23.3	29.2	34.9	18.0	9.5	8.1	23.0	12.5	10.1	70.2	76%
38.0	37.9	38.2	38.0	434.0	217	43.3	99.8	97.0	98.0	21.6	29.3	36.9	18.4	9.4	7.6	22.3	12.2	10.0	70.4	91%
39.3	39.2	39.2	39.1	425.9	182	46.4	100.0	97.5	99.2	19.9	29.2	38.2	18.7	9.4	7.6	22.6	11.8	10.4	68.7	98%
37.1	37.0	36.9	37.0	433.7	182	32.9	100.9	97.3	99.7	17.9	29.3	40.9	18.9	9.5	7.4	22.0	12.2	11.0	66.2	98%
37.1	37.0	37.0	37.0	425.1	237	27.3	101.1	98.3	99.8	16.4	29.1	41.6	19.1	9.6	7.4	22.0	12.2	11.1	63.7	95%
35.1	35.0	35.0	34.9	382.2	225	50.4	101.2	97.3	99.1	14.2	29.2	43.5	19.1	10.0	7.2	22.8	12.1	11.0	64.8	94%
34.0	34.0	34.0	34.1	373.7	215	49.5	100.7	97.7	99.3	12.3	29.1	45.1	19.2	9.9	7.1	22.5	11.8	11.1	62.4	94%
34.1	33.9	34.0	34.0	363.9	252	50.3	100.7	97.7	99.5	16.3	24.5	46.6	19.2	10.1	7.0	22.3	11.3	11.1	60.4	92%
29.9	30.0	30.0	30.0	368.8	226	50.4	99.7	97.2	99.4	25.4	19.1	47.0	19.5	10.2	6.9	23.1	11.4	11.0	59.1	87%
30.0	30.0	29.9	30.0	342.4	165	50.0	98.8	96.4	98.8	29.5	17.4	45.0	19.8	10.1	6.9	23.5	11.9	10.9	58.4	87%
15.4	39.0	39.0	39.1	317.5	235	50.8	97.6	95.6	98.3	32.7	15.5	40.9	19.6	10.2	6.9	23.2	11.9	10.8	58.0	85%
15.9	39.1	39.0	39.0	338.5	116	32.3	97.1	95.5	98.3	32.4	13.9	39.8	19.5	10.0	6.9	23.2	11.9	15.4	53.2	84%
24.5	27.0	37.0	37.0	224.4	143	0.2	96.9	95.4	98.1	32.4	12.3	38.8	19.6	10.0	6.9	23.7	11.8	24.5	47.3	43%
24.1	1.2	37.0	37.0	216.8	178	1.2	96.6	94.7	97.4	32.5	10.5	37.2	19.8	10.2	7.3	24.2	11.8	30.3	43.5	53%
24.5	0.6	38.2	38.3	233.0	246	0.3	98.2	95.9	97.3	32.0	8.0	35.2	19.4	9.2	7.8	24.1	12.2	32.3	43.2	54%
24.7	18.9	39.5	39.5		249	0.3	103.1	98.0	98.1	32.8	5.1	33.3	19.1	8.9	8.5	24.9	12.7	38.3	42.9	0%
24.9	19.1	28.2	18.9	1.6	104	0.3	102.8	97.2	97.4	31.1	5.0	27.4	19.0	8.8	8.9	25.6	13.2	51.0	42.8	0%
25.7	20.2	33.5	20.6	1.8	152	0.3	97.0	94.5	96.5	29.3	4.9	22.8	18.9	8.5	9.3	25.4	13.4	62.6	42.7	0%
36.5	15.4	34.4	34.3	289.7	163	0.6	96.7	94.8	96.2	27.8	5.0	20.7	18.9	8.7	9.5	25.8	16.0	68.9	43.0	75%
37.0	16.0	36.9	37.0	313.4	159	0.3	98.9	96.7	98.0	26.3	5.1	23.2	19.2	9.0	9.5	25.6	13.2	73.9	43.1	84%
34.1	29.9	32.3	32.3	364.9	209	1.3	101.0	98.0	99.3	24.8	5.3	25.1	20.4	10.0	9.6	26.1	13.0	77.8	43.2	91%
34.2	30.1	29.9	29.9	359.0	196	0.3	101.5	98.4	99.8	23.3	5.7	26.3	20.8	10.2	9.7	26.4	13.6	77.0	43.2	87%
34.0	30.1	30.0	29.9	362.4	200	0.3	101.9	98.7	100.1	21.7	6.6	26.5	21.1	10.6	9.7	27.1	13.8	75.1	43.3	89%
33.0	29.1	29.1	28.9	366.6	199	0.3	102.8	99.1	100.2	20.0	10.1	26.9	20.9	10.5	9.5	26.9	13.5	74.6	43.4	88%
					4744															
					197.7															

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JANUARY 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam	Desuper Steam HEX Steam		Flash Chamber	Flash Chamber	Acid Outlet		Acid Inlet		Conductivity
	Flow		Flow	Pressure	Temperature	Temperature	Pressure	Temperature	Temperature	Temperature		
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV		
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	C	uS/cm	
16/01/2001 18:00:00	22.0	14.0	12.1	435	101	85.1	18.8	86.6	86.4	10.7		
16/01/2001 19:00	29.0	9.5	15.9	420	108	90.6	18.9	92.7	92.1	11.6		
16/01/2001 20:00	64.8	48.2	18.0	414	108	88.8	19.1	91.0	90.2	11.3		
16/01/2001 21:00	54.7	41.7	20.7	417	107	86.4	19.2	88.8	87.8	11.7		
16/01/2001 22:00	52.4	35.3	22.1	398	110	88.7	19.5	90.7	89.7	11.0		
16/01/2001 23:00	73.6	52.0	24.0	386	112	90.0	21.1	92.2	91.1	10.7		
17/01/2001 0:00	63.0	40.6	24.0	397	110	86.2	19.6	88.2	87.0	10.5		
17/01/2001 1:00	53.5	39.7	24.0	399	111	88.4	20.2	90.7	89.5	10.6		
17/01/2001 2:00	71.2	43.6	25.0	386	113	89.4	20.7	91.7	90.5	10.3		
17/01/2001 3:00	75.9	48.0	26.0	376	112	87.8	21.1	89.8	88.6	10.3		
17/01/2001 4:00	63.2	49.6	26.0	374	111	86.6	20.5	89.1	87.9	10.2		
17/01/2001 5:00	57.0	38.8	26.0	369	112	88.2	20.0	90.6	89.4	10.3		
17/01/2001 6:00	67.9	46.4	26.0	376	113	89.1	20.2	91.2	90.0	10.1		
17/01/2001 7:00	75.5	53.4	26.0	413	114	88.3	20.6	90.5	89.2	9.9		
17/01/2001 8:00	62.0	44.2	26.0	411	113	86.5	19.5	89.0	87.6	9.8		
17/01/2001 9:00	62.3	22.0	26.0	409	115	89.1	19.5	91.3	90.0	9.9		
17/01/2001 10:00	71.9	43.1	26.0	400	113	87.9	19.3	90.1	88.8	10.0		
17/01/2001 11:00	51.3	42.3	26.1	406	114	87.3	19.5	89.9	88.6	9.9		
17/01/2001 12:00	69.2	42.1	26.1	418	115	89.0	19.5	91.1	89.7	9.7		
17/01/2001 13:00	51.7	36.9	26.0	400	114	87.4	19.7	89.8	88.5	9.8		
17/01/2001 14:00	60.4	43.2	22.9	417	112	88.6	20.2	90.9	89.8	9.8		
17/01/2001 15:00	62.5	39.4	25.0	418	113	87.5	21.5	89.9	88.7	9.9		
17/01/2001 16:00	70.4	48.8	25.5	413	114	88.4	22.5	90.7	89.4	10.1		
17/01/2001 17:00	71.0	50.9	25.5	416	113	87.4	22.6	89.2	88.0	9.7		
17/01/2001 18:00	53.0	28.6	25.5	415	115	88.5	22.0	91.1	89.8	9.6		
	61.5		23.8									

Assuming 40% only

JANUARY 2001 – BOTTOM LEFT

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
16/01/2001 18:00:00	tons	tons	tons	%	%	%	%	%
16/01/2001 18:00:00	1068.7	1767.8	1779.0	12.9	9.9	69.9	24.8	29.2
#####	2662.4	1465.0	2608.1	13.5	74.6	43.4	20.0	10.1
Change	1593.7	-302.9	829.2	0.6	64.7	-26.5	-4.9	-19.0
			6735.5			38.2		-23.9

24 Hour Production Figures			Assumptions	
Rock Consumed	6245 tonnes		24.4% P2O5 @	23.9% moisture
H2SO4 Consumed	1574 m3			1.83 sg
Intermediate Acid	2167 m3		39% P2O5 @	1.46 sg
Weak Acid	0m3		21.1% P2O5 @	1.28 sg
Intern. Acid evap.	1481 m3			
Strong Acid produced	973 m3		51% P2O5 @	1.65 sg
HH Cake produced	7383 tonnes		1.69% P2O5 @	24.1% moisture
Waste Water	4744 m3		1.35% P2O5 @	
Steam Consumed	578 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P2O5	3.9			
t H2SO4 / t P2O5	2.31 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.70			
Calculated Efficiencies			Simplified	
%P2O5 loss	8.6%	8.7%	Note: Only current if HH cake produced	
%P2O5 losses calc.	158.6 tons to gypsum & wastewater			

					%P2O5 loss Efficiency	
A	24.39 % P2O5 in rock	Simplified	8.65	91.35		
B	32.97 % CaO in rock	Actual	8.61	91.39		
C	38.70 % P2O5 in product acid (average value)					
D	0.29 % CaO in product acid (average value)					
E	1.69 % P2O5 (total) in dry HH cake					
F	26.34 % CaO in dry HH cake					
					%P2O5 loss Efficiency	
A	24.39 % P2O5 in rock	Simplified	8.65	91.35		
B	32.97 % CaO in rock	Actual	8.61	91.39		
C	38.70 % P2O5 in product acid (average value)					
D	0.29 % CaO in product acid (average value)					
E	1.69 % P2O5 (total) in dry HH cake					
F	26.34 % CaO in dry HH cake					

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Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total		
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68			
%	%	%	%	%	%	% P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%			
32.9	17.8	9.6	8.6	25.3	72.8	Level new	20.0	10.1	26.9	20.9	10.5	9.5	26.9			
26.9	20.9	10.5	9.5	26.9	31.5	Level old	24.8	29.2	32.9	17.8	9.6	8.6	25.3			
-5.9	3.1	0.9	0.9	1.5	-41.3	P ₂ O ₅ total old	100.2	117.6	319.9	173.1	93.2	119.7	352.9	1276.6		
		-1.9		2.4		P ₂ O ₅ total new	80.5	40.9	262.2	203.4	102.3	132.1	374.5	1195.8		
Production if Granulation offline														-80.8		
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅			
							Weak Acid	121	0.6	20%	1.26	403	2	806	0.151	
							Intermediate Acid	568	0.9	40%	1.52	973	3	2918	0.195	
							Strong Acid	507	0.7	52%	1.68	1394	2	2789	0.182	
							P2O5 total	1,196					6514	18.358191		
Production Used by Granulation																
									Conc.		Total					
								m3	P2O5	sg	P2O5					
							Weak Acid	594.6	20%	1.26	150					
							Intermediate Acid	278.8	40%	1.52	170					
							Strong Acid	907.1	52%	1.68	791					
											1110tpd					
							Granulation	split	tph P2O5	tpd P2O5	Ratio	tph DAP	tpd DAP			
							Weak		0.065	8.8	210.6	13.9%				
							Intermediate		0.191	25.8	618.84	40.7%		135	3240	
							Strong		0.213	28.8	690.12	45.4%				
									0.469	63.315	1519.56	100%				
							m3									
							Weak			34.8						
							Intermediate			42.4						
							Strong			33.0						
Amount of P2O5 contained in all 7 storage tanks when full																
							Description	Storage	sg	Acid	P ₂ O ₅					
								m ³	t/m ³	tons	tons					
							Weak Acid	3200	1.26	4032	806.4					
							Intermediate Acid	4800	1.52	7296	2918.4					
							Strong Acid	3200	1.676	5363	2788.9					
											6513.7					
							Acid consumption		2.6t (100% H ₂ SO ₄) per t P ₂ O ₅							
							Tons H ₂ SO ₄ required		16936tons as 100% sulphuric acid							
							Tons H ₂ SO ₄ required		17193tons as 98.5% sulphuric acid							

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JANUARY 2001 – BOTTOM RIGHT

10/04/2001 18:00Start Time

11/04/2001 18:00Finish Time

Clear Old

Update Shift

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

Time	Rock Slurry Filter		Rock Feed (weighbelt)	Reactor agitator				H ₂ SO ₄ to Acid		Recirculation Slurry (FIC25003)	Reactor 2 Temperature (TI25004)	Cooler Vacuum		Reactor 2 Level (LI25001)	Return Acid		HH Filter Feed			
	No. 1 sg	No. 2 sg		Reactor 1A agitator amps	Reactor 1B agitator amps	Reactor 1C agitator amps	Reactor 2 agitator amps	H ₂ SO ₄ to Acid Mixer B (FIC25001)	H ₂ SO ₄ to Acid Mixer A (FIC25002)			Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)		Return Acid Mixer A (FIC30004)	Return Acid Mixer B (FIC35004)	HH Filter Feed (FIC25004)	AHH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV		4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV			44PI25002.PV	44PI25003.PV		44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
10/04/2001 18:00:00	1.55	1.57	307.4	249.5	305.0	105.4	39.5	39.0	39.1	2436.7	99.8		58.8	71.0	156.2	155.7	131.1	132.0	131.0	130.8
10/04/2001 19:00	1.41	1.56	360.9	238.0	292.5	104.1	40.5	43.4	43.3	2707.0	98.6	55.4	56.9	71.9	175.2	174.7	139.6	140.2	140.4	139.9
10/04/2001 20:00	1.37	1.56	358.6	238.5	285.0	105.2	39.0	43.2	43.3	2652.4	98.6	55.2	56.8	69.1	174.7	175.1	150.3	149.8	150.2	150.0
10/04/2001 21:00	1.26	1.56	351.0	241.0	294.0	106.4	39.5	41.5	41.5	2597.7	98.0	54.8	56.4	67.6	175.1	175.0	139.6	140.5	139.4	140.0
10/04/2001 22:00	1.48	1.60	380.1	238.0	309.0	102.3	40.0	40.4	40.3	2609.7	97.5	54.9	56.1	68.1	175.0	175.2	139.9	139.6	140.1	139.8
10/04/2001 23:00	1.63	1.61	367.0	238.0	299.5	106.6	37.5	42.4	42.5	2678.5	97.9	55.1	56.6	70.0	175.9	174.8	140.0	139.1	140.2	140.0
11/04/2001 0:00	1.63	1.61	364.4	235.5	306.0	110.6	40.5	42.3	42.5	2700.0	97.8	55.2	56.6	70.8	170.1	169.7	144.5	144.7	145.3	144.9
11/04/2001 1:00	1.63	1.61	353.1	245.5	298.0	106.1	40.0	42.4	42.3	2608.3	97.9	55.2	56.6	68.2	169.7	169.9	145.2	145.2	145.4	144.8
11/04/2001 2:00	1.63	1.61	360.2	242.5	302.5	109.2	39.5	42.3	42.4	2604.8	98.0	55.7	56.7	68.1	169.8	170.4	140.0	140.3	139.5	140.0
11/04/2001 3:00	1.63	1.61	379.6	244.0	302.0	103.7	39.0	42.5	42.4	2625.2	98.0	55.7	56.8	68.7	170.0	169.7	140.0	140.1	140.2	140.0
11/04/2001 4:00	1.63	1.61	374.9	238.0	310.5	109.7	40.0	42.5	42.3	2612.8	98.0	55.8	57.0	68.4	170.1	170.3	140.0	140.5	140.1	139.7
11/04/2001 5:00	1.68	1.66	385.3	237.0	297.0	108.6	38.0	42.4	42.4	2668.3	98.0	55.9	57.0	70.0	169.8	170.1	145.2	145.2	145.3	145.1
11/04/2001 6:00	1.68	1.66	359.7	230.0	297.0	107.4	39.5	42.3	42.4	2598.7	97.9	55.9	56.9	68.2	170.1	169.6	144.9	145.1	145.2	145.1
11/04/2001 7:00	1.67	1.66	355.9	224.5	301.0	102.0	40.0	42.4	42.4	2557.1	98.0	55.8	57.0	67.1	170.0	170.0	144.8	145.2	140.1	140.7
11/04/2001 8:00	1.68	1.67	363.8	239.5	295.0	112.3	38.5	42.7	42.7	2536.9	98.1	55.8	57.0	66.3	170.0	170.1	144.6	139.9	140.0	140.2
11/04/2001 9:00	1.68	1.66	354.6	231.5	296.5	109.2	38.0	42.6	42.7	2524.4	98.2	55.9	57.1	66.0	168.7	168.8	144.9	140.3	139.9	140.0
11/04/2001 10:00	1.67	1.66	354.8	238.0	293.5	105.4	41.0	42.6	42.5	2709.6	98.4	56.1	57.7	74.5	167.8	167.5	140.1	140.0	130.3	139.9
11/04/2001 11:00	1.67	1.67	373.3	238.0	294.0	106.2	38.0	42.6	42.6	2711.4	98.5	56.1	57.7	74.9	167.9	167.8	145.0	144.5	135.9	145.0
11/04/2001 12:00	1.67	1.64	354.5	242.5	296.5	101.9	39.5	42.7	42.7	2708.7	98.5	56.1	57.7	73.4	168.2	167.7	145.1	145.0	135.1	145.1
11/04/2001 13:00	1.67	1.65	362.6	238.0	298.0	108.4	42.0	41.6	42.8	2706.8	98.5	56.1	57.7	71.9	168.5	168.8	145.1	145.0	135.1	135.4
11/04/2001 14:00	1.65	1.62	355.0	241.0	302.0	105.1	40.0	43.5	43.5	2708.7	98.7	56.2	57.9	71.7	168.6	168.3	145.1	144.4	134.7	135.1
11/04/2001 15:00	1.65	1.62	351.4	245.0	301.0	106.1	38.5	43.1	43.2	2705.7	98.9	56.2	57.9	71.1	168.7	168.5	140.4	140.1	135.0	134.9
11/04/2001 16:00	1.67		167.4	263.5	311.5	105.9	40.0		43.2	1850.2	97.0	54.9		74.6	168.1		139.7	138.7	119.9	85.1
11/04/2001 17:00	1.65		173.4	263.0	316.0	104.0	40.0		46.5	1348.7	98.0	55.2		76.6	167.8	272.5	144.5	145.0	76.6	83.2
11/04/2001 18:00		1.60	180.3	265.0	319.0	108.3	41.0		46.5	1350.4	97.9	54.8		73.9	168.4	250.0	155.0	154.8	75.3	85.5
Total for shift			6689						1649		2503.4									

APRIL 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Reactor 1A Cooling Tower Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production	
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
32.6	32.4	33.0	33.1	387.4	132	96.5	97.5	97.7	99.0	5.3	17.8	41.9	8.5	7.5	24.3	27.1	57.4	73.3	20.6	85%
41.6	41.3	41.4	41.2	406.9	129	100.0	98.3	98.4	100.3	7.5	16.8	44.7	8.4	7.7	23.0	25.9	48.7	81.8	20.4	100%
42.5	42.5	41.2	41.2	438.4	267	0.2	98.7	98.3	100.1	10.1	14.8	49.5	8.4	7.5	21.8	24.9	39.0	87.0	20.5	100%
41.7	40.4	40.1	40.1	406.2	97	27.3	98.7	97.2	99.4	14.9	12.9	53.9	8.3	7.6	20.8	24.1	29.5	92.5	21.7	97%
39.4	39.9	39.9	40.2	403.9	260	0.2	98.4	96.7	98.7	20.5	11.2	54.4	8.3	7.9	19.7	23.2	19.7	91.7	29.4	106%
40.2	40.5	40.0	39.9	407.6	199	2.2	98.0	96.8	98.7	25.0	9.6	54.1	8.3	7.8	18.8	22.4	19.1	82.0	38.2	102%
39.2	39.3	39.9	39.9	430.3	214	2.2	97.7	96.9	98.9	23.7	14.5	53.4	8.3	8.1	17.9	21.6	19.2	72.4	47.2	101%
39.2	39.2	39.9	40.0	430.2	268	12.3	97.6	97.0	99.0	21.7	17.4	56.0	8.3	8.1	17.0	20.8	19.2	62.7	56.0	98%
39.8	40.3	39.8	40.2	420.7	186	93.4	97.6	97.1	99.1	19.7	20.9	59.8	8.3	8.1	16.0	19.9	19.1	53.0	65.2	100%
39.2	40.3	39.9	40.0	419.0	226	0.2	97.6	97.1	99.1	17.7	21.6	63.3	8.5	8.1	15.1	19.1	19.0	43.6	74.2	105%
39.2	39.1	39.7	40.0	421.7	175	0.2	97.6	97.0	98.9	15.5	23.2	66.8	8.4	8.1	14.4	18.4	18.3	34.0	83.3	104%
39.5	39.9	39.8	40.5	423.8	264	0.2	97.8	96.8	98.9	13.4	27.0	69.3	8.5	8.4	13.6	17.5	19.0	28.5	88.5	107%
39.5	40.4	40.0	40.0	450.0	112	10.2	97.5	96.7	98.9	11.3	26.2	73.4	8.6	8.3	12.8	16.7	18.8	37.6	79.4	100%
39.3	40.7	39.1	39.3	441.2	261	10.2	97.6	96.7	98.9	10.7	26.4	77.3	8.6	8.4	11.7	15.8	18.8	46.4	70.4	99%
39.9	38.1	39.2	38.2	432.5	261	10.2	97.6	96.9	99.0	13.9	24.5	80.8	8.7	8.6	10.8	14.9	19.0	55.1	61.5	101%
37.9	38.4	38.1	37.9	423.0	139	10.3	97.5	97.0	99.1	16.5	22.6	83.8	8.9	7.9	10.4	13.9	19.2	64.0	52.1	99%
38.8	38.6	35.1	38.2	372.4	259	10.3	97.4	97.3	99.3	18.9	20.6	84.3	8.9	7.9	9.8	13.0	19.2	72.1	43.2	99%
39.7	39.1	36.0	39.4	451.3	150	10.3	97.6	97.3	99.4	23.8	18.9	86.1	8.9	7.6	9.6	11.9	19.5	79.7	33.9	104%
39.6	39.9	35.9	39.5	455.0	141	39.4	97.9	97.6	99.4	28.9	17.4	85.9	8.7	7.2	9.3	10.5	20.0	87.4	24.9	98%
39.9	39.8	35.7	38.8	447.1	257	39.4	98.3	97.8	99.5	34.3	17.2	87.4	8.5	7.0	9.6	10.1	22.9	92.1	16.1	101%
39.8	39.7	35.9	36.9	436.0	213	39.4	98.2	97.9	99.6	33.4	17.4	90.3	8.7	7.1	9.6	10.2	32.0	86.1	13.3	99%
38.8	37.2	37.0	37.2	440.9	261	114.5	98.7	98.3	99.9	34.2	17.7	87.3	18.9	7.7	9.5	10.8	39.5	76.6	13.3	98%
39.5	37.1	33.0	13.9	218.0	258	69.9	96.6	96.9	99.6	34.2	18.2	86.1	24.5	7.8	9.5	11.5	48.3	69.4	13.4	46%
39.9	37.6			220.0	204	28.3	96.2	95.7	98.2	33.9	17.7	85.1	27.7	7.8	9.4	11.7	54.8	64.7	13.3	48%
41.2	40.2			236.4	262	114.5	95.9	95.8	97.8	33.8	17.8	83.9	32.2	7.5	9.4	11.9	60.4	60.1	13.4	50%
					3828															
					159.5															

11/04/2001 18:00

APRIL 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
10/04/2001 18:00:00	39.7	52.3		413	103	69.8	32.5	70.2	71.0	17.1
10/04/2001 19:00	39.8	26.0	14.0	400	102	70.0	32.8	71.6	71.9	19.3
10/04/2001 20:00		62.2	17.3	398	102	71.8	33.4	73.0	73.2	18.0
10/04/2001 21:00	96.1	58.3	17.0	396	101	71.7	33.8	72.7	72.9	17.0
10/04/2001 22:00	94.1	52.7	17.0	395	101	71.6	33.9	73.4	73.6	16.7
10/04/2001 23:00	50.8	35.2	17.0	398	101	72.2	34.3	73.4	73.6	16.5
11/04/2001 0:00	48.7	31.6	17.0	400	101	72.0	34.3	73.5	73.7	16.4
11/04/2001 1:00	48.6	27.0	14.9	401	101	72.2	34.1	74.1	74.3	16.3
11/04/2001 2:00				441	98	70.2	60.8	70.4	71.2	15.5
11/04/2001 3:00					87	62.9		66.6	60.3	14.8
11/04/2001 4:00					81	56.1		62.2	49.3	15.4
11/04/2001 5:00					77	51.0		61.0	35.3	15.5
11/04/2001 6:00					73	47.2		60.0	31.4	15.6
11/04/2001 7:00					70	43.4		57.2	25.0	15.6
11/04/2001 8:00					67	40.5		53.9	24.0	15.6
11/04/2001 9:00					64	38.5		51.4	24.7	15.6
11/04/2001 10:00					61	37.3		49.3	26.4	15.5
11/04/2001 11:00					59	36.7		47.7	27.7	15.3
11/04/2001 12:00					58	36.7		47.4	29.1	15.3
11/04/2001 13:00					56	36.8		46.9	31.3	15.2
11/04/2001 14:00	91.9			420	69	39.6	99.1	65.0	75.6	15.1
11/04/2001 15:00	9.7	0.2	4.0	419	116	86.6	98.8	87.3	88.0	15.6
11/04/2001 16:00	9.9	0.9	10.0	409	111	81.2	33.9	82.6	83.0	20.8
11/04/2001 17:00	15.0	2.6	15.1	382	111	83.8	33.5	85.8	85.6	20.3
11/04/2001 18:00	20.1	2.7	18.0	386	111	85.0	30.2	87.6	86.9	18.1
	29.3		14.7							

Assuming 40% only

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
10/04/2001 18:00:00	tons	tons	tons	%	%	%	%	%
11/04/2001	305.3	365.8	2007.0	57.4	73.3	20.6	5.3	17.8
	305.5	387.1	1156.9	60.4	60.1	13.4	33.8	17.8
Change	0.2	21.3	-850.1	3.0	-13.2	-7.2	28.5	0.0
			1849.4			-20.4		28.5

24 Hour Production Figures

Rock Consumed	6689 tonnes	22.7% P2O5 @	20.6% moisture
H2SO4 Consumed	1649 m3		1.83 sg
Intermediate Acid	1858 m3	37% P2O5 @	1.46 sg
Weak Acid	178 m3	22.8% P2O5 @	1.30 sg
Interm. Acid evap.	1051 m3		
Strong Acid produced	737 m3	54% P2O5 @	1.69 sg
HH Cake produced	6922 tonnes	1.32% P2O5 @	24.6% moisture
Waste Water	3828 m3	0.95% P2O5 @	
Steam Consumed	399 tonnes		
Process Water	tonnes		
Key Performance			
t Rock / t P2O5	5.0		
t H2SO4 / t P2O5	2.80 (as 100% sulphuric acid)		
t Steam/t 52% P2O5	0.59		

Calculated Efficiencies

%P2O5 loss	8.0%	8.1%
%P2O5 losses calc.	105.1 tons to gypsum & wastewater	

Simplified

Note: Only current if HH cake produced

		%P2O5 loss	Efficiency	
A	22.73 % P2O5 in rock	Simplified	8.06	91.94
B	30.60 % CaO in rock	Actual	8.02	91.98
C	36.46 % P2O5 in product acid (average value)			
D	0.30 % CaO in product acid (average value)			
E	1.32 % P2O5 (total) in dry HH cake			
F	22.06 % CaO in dry HH cake			
		%P2O5 loss	Efficiency	
A	22.73 % P2O5 in rock	Simplified	8.06	91.94
B	30.60 % CaO in rock	Actual	8.02	91.98
C	37.17 % P2O5 in product acid (average value)			
D	0.29 % CaO in product acid (average value)			
E	1.32 % P2O5 (total) in dry HH cake			
F	22.06 % CaO in dry HH cake			

APRIL 2001 – BOTTOM LEFT

11/04/2001 18:00

Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total	
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68		
%	%	%	%	%	%	P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%		
41.9	8.5	7.5	24.3	27.1	66.0	Level new	33.8	17.8	83.9	32.2	7.5	9.4	11.9		
83.9	32.2	7.5	9.4	11.9	38.9	Level old	5.3	17.8	41.9	8.5	7.5	24.3	27.1		
42.0	23.7	0.1	-14.9	-15.2	-27.1	P ₂ O ₅ total old	21.5	72.0	407.7	83.1	72.7	339.4	377.4	1373.7	
65.7						P ₂ O ₅ total new	136.3	72.0	816.0	313.2	73.4	131.2	165.3	1707.4	
Production if Granulation offline														333.7	
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅		
							Weak Acid	208	1.0	20%	1.26	403	2	806	0.258
							Intermediate Acid	1,203	1.9	40%	1.52	973	3	2918	0.412
							Strong Acid	297	0.4	52%	1.68	1394	2	2789	0.106
							P2O5 total	1,707					6514	26.21203	
Production Used by Granulation															
								m3	P2O5	sg	Total	P2O5			
							Weak Acid	570.0	20%	1.26	144				
							Intermediate Acid	618.5	40%	1.52	376				
							Strong Acid	684.2	52%	1.68	596				
1116tpd															
							Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
							Weak	0.065	8.8	210.6	13.9%		135	3240	
							Intermediate	0.191	25.8	618.84	40.7%				
							Strong	0.213	28.8	690.12	45.4%				
								0.469	63.315	1519.56	100%				
Filter Recovery Efficiency (Simplified HFT method)															
Acid produced to Rock Input Efficiency															
Input - Losses Efficiency															
							m3								
							Weak	34.8							
							Intermediate	42.4							
							Strong	33.0							
Amount of P2O5 contained in all 7 storage tanks when full															
							Description	Storage	sg	Acid	P ₂ O ₅				
								m ³	t/m ³	tons	tons				
							Weak Acid	3200	1.26	4032	806.4				
							Intermediate Acid	4800	1.52	7296	2918.4				
							Strong Acid	3200	1.676	5363	2788.9				
6513.7															
							Acid consumption	2.6t (100% H ₂ SO ₄) per t P ₂ O ₅							
							Tons H ₂ SO ₄ required	16936tons as 100% sulphuric acid							
							Tons H ₂ SO ₄ required	17193tons as 98.5% sulphuric acid							

APRIL 2001 – BOTTOM RIGHT

02/05/2001 18:00 Start Time

03/05/2001 18:00 Finish Time

Clear Old

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry	Rock Slurry	Rock Feed (weighbelt)	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid Mixer B	H ₂ SO ₄ to Acid Mixer A	Recirculation Slurry	Reactor 2 Temperature	Cooler Vacuum A	Cooler Vacuum B (PI25003)	Reactor 2 Level	Return Acid Mixer A	Return Acid Mixer B	HH Filter Feed	HH Filter Feed	HH Filter Feed	HH Filter Feed
	Filter No. 1 sg	Filter No. 2 sg		agitator amps	agitator amps	agitator amps	agitator amps	(FIC25001)	(FIC25002)	(FIC25003)	(TI25004)	(PI25002)	(PI25003)	(LI25001)	(FIC30004)	(FIC35004)	A (FIC25004)	B (FIC25005)	C (FIC25006)	D (FIC25007)
	41DI20001.PV	41DI20002.PV		4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
02/05/2001 18:00:00	1.70	1.68	361.6	225.5	287.0	140.9	42.0	45.6	45.5	2725.6	100.2	53.0	56.6	74.4	176.9	176.8	155.5	154.9	134.8	160.2
02/05/2001 19:00	1.70	1.68	372.3	220.5	284.0	134.9	41.5	45.5	45.6	2724.1	100.3	53.4	56.9	73.5	177.3	176.9	155.3	155.1	135.0	160.0
02/05/2001 20:00	1.70	1.69	373.8	216.0	291.0	139.1	42.5	45.5	45.5	2727.1	100.3	53.6	56.7	73.0	177.0	176.9	154.8	154.6	139.7	155.1
02/05/2001 21:00	1.71	1.69	367.5	219.0	292.5	140.6	41.0	45.5	45.5	2726.1	100.3	53.5	56.6	71.7	176.9	177.1	153.9	154.0	140.0	154.3
02/05/2001 22:00	1.71	1.69	377.3	212.0	289.5	140.4	39.0	45.5	45.4	2726.1	100.3	53.7	56.9	71.8	177.4	177.2	154.0	154.3	140.2	154.1
02/05/2001 23:00	1.72	1.70	379.5	213.0	285.5	136.0	40.0	45.5	45.5	2722.5	100.1	53.7	56.6	72.1	177.1	176.8	153.9	153.8	140.3	154.2
03/05/2001 0:00	1.72	1.69	399.9	209.0	288.0	140.0	40.5	45.5	45.5	2725.2	100.1	53.7	56.3	71.2	177.0	177.1	154.0	150.1	144.9	154.2
03/05/2001 1:00	1.72	1.70	387.4	222.0	285.5	137.7	40.0	45.8	45.7	2724.6	100.0	53.8	56.6	70.8	177.0	177.0	152.1	150.4	145.2	152.2
03/05/2001 2:00	1.73	1.70	375.4	225.5	284.0	138.9	40.5	45.7	45.7	2725.4	99.9	53.8	56.6	71.3	177.1	177.1	152.5	150.1	144.8	152.3
03/05/2001 3:00	1.73	1.70	386.4	212.0	291.0	141.0	41.0	45.9	45.9	2726.2	99.9	54.0	56.1	71.3	177.1	177.2	152.2	149.8	144.8	151.8
03/05/2001 4:00	1.73	1.70	375.0	212.0	294.0	142.5	42.0	40.0	39.9	2450.4	97.0	51.9	53.4	68.8	173.7	173.9	130.5	140.0	139.7	139.8
03/05/2001 5:00	1.73	1.70	368.7	220.5	289.5	138.6	40.5	45.0	45.0	2725.5	98.9	53.4	55.7	71.8	175.3	175.3	143.4	143.9	144.1	143.9
03/05/2001 6:00	1.73	1.70	365.6	226.0	299.5	143.6	42.0	45.8	45.8	2724.0	99.3	53.8	56.2	74.3	177.8	178.2	144.3	143.9	143.8	144.3
03/05/2001 7:00	1.73	1.70	368.1	222.0	285.5	143.2	40.5	46.2	46.2	2726.0	99.8	53.8	57.1	77.2	174.7	175.0	146.4	144.1	147.0	144.0
03/05/2001 8:00	1.74	1.70	372.9	217.5	294.0	138.4	42.0	45.6	45.6	2725.9	99.3	53.8	56.5	77.3	172.5	172.4	149.3	148.9	149.2	149.1
03/05/2001 9:00	1.74	1.71	343.3	231.5	302.0	138.3	40.5	43.6	43.7	2573.6	99.5	54.5	57.0	74.2	164.0	163.8	144.3	143.9	143.9	144.1
03/05/2001 10:00	1.74	1.72	341.4	230.0	299.5	140.8	41.0	43.7	43.7	2573.3	99.6	54.4	57.0	73.6	163.7	163.8	138.6	139.0	139.1	139.0
03/05/2001 11:00	1.74	1.72	341.4	224.5	280.0	142.0	41.0	43.2	43.0	2572.8	99.4	54.1	56.6	72.7	164.2	163.9	138.6	138.9	139.0	139.1
03/05/2001 12:00	1.73	1.71	337.7	227.5	296.5	139.5	40.0	43.1	43.1	2577.0	99.4	54.0	56.5	72.4	164.0	164.1	139.0	139.3	138.7	139.2
03/05/2001 13:00	1.74	1.71	338.8	226.0	297.0	138.5	40.5	42.0	42.1	2575.2	99.0	53.9	56.2	70.9	164.3	164.3	139.7	139.0	133.9	134.1
03/05/2001 14:00	1.74	1.72	355.4	235.5	297.0	134.9	38.0	42.2	42.2	2574.0	98.5	53.6	55.7	68.7	163.8	164.3	133.7	133.9	134.2	133.9
03/05/2001 15:00	1.74	1.72	340.3	238.0	286.5	142.9	40.5	42.2	42.3	2574.0	98.7	53.6	55.9	69.8	163.8	164.1	134.4	134.1	133.9	134.2
03/05/2001 16:00	1.74	1.72	330.0	236.5	294.0	135.9	42.5	42.2	42.2	2572.9	99.0	53.9	56.2	70.3	161.9	162.1	134.5	133.7	133.9	134.3
03/05/2001 17:00	1.73	1.72	337.1	243.5	300.5	139.7	40.5	33.8	34.3	2572.4	99.3	54.5	56.8	71.0	161.8	161.7	133.9	134.3	133.9	134.1
03/05/2001 18:00	1.74	1.72	336.6	241.0	295.0	137.9	39.5	41.7	41.6	2575.7	99.3	55.1	57.1	72.1	161.9	162.0	134.1	133.7	134.0	134.0
Total for shift			6689						1649		2650.8									

MAY 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Reactor 1A Cooling Tower Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production	
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
43.5	43.1	37.0	43.3	459.7	245	99.9	98.9	98.7	100.6	9.5	19.5	46.3	11.4	16.8	9.4	42.5	93.3	92.7	62.0	100%
42.7	43.6	36.2	43.3	449.9	261	98.9	99.0	99.0	100.9	15.0	18.9	45.3	11.3	16.8	8.8	42.9	93.2	92.8	59.4	103%
42.7	42.8	36.2	43.5	455.2	253	49.8	99.1	99.1	101.1	13.8	17.7	47.3	11.1	16.8	8.4	43.4	93.2	93.7	57.1	104%
41.9	41.1	41.3	41.3	449.8	245	102.4	99.2	99.2	101.1	21.1	16.3	45.2	11.1	16.8	8.2	43.9	93.3	93.8	55.0	102%
41.4	41.1	41.2	41.3	454.7	259	99.4	99.2	99.1	101.1	22.2	15.4	46.7	10.8	17.0	8.1	44.7	93.3	93.8	54.0	105%
41.4	41.1	40.8	40.9	449.8	252	99.4	99.2	99.2	101.1	24.4	14.6	48.9	10.8	16.9	8.0	45.5	93.2	93.9	54.5	105%
41.2	41.4	41.5	41.4	457.9	228	99.4	99.1	99.1	101.1	26.3	13.6	51.8	10.7	17.2	7.9	46.0	93.2	93.9	54.2	111%
41.5	40.3	41.9	41.3	455.2	232	99.4	98.8	99.1	101.4	28.4	13.1	57.5	10.6	17.1	7.9	45.2	93.5	93.8	53.8	108%
41.3	41.9	41.5	41.3	455.9	176	99.1	98.9	98.9	101.0	31.4	13.3	63.2	10.7	17.2	7.8	45.2	93.5	93.8	53.0	104%
41.5	40.9	41.3	41.0	441.8	177	99.2	98.9	98.9	101.0	30.6	13.2	66.9	10.5	17.1	7.7	47.7	93.4	93.7	52.1	107%
41.1	40.9	41.3	41.5	388.0	260	98.8	97.4	98.5	100.9	30.7	13.2	70.2	10.6	17.2	7.7	50.1	93.3	93.6	51.3	104%
41.7	41.2	41.3	41.1	437.5	281	98.3	97.6	97.6	99.7	31.0	12.4	70.9	10.4	17.2	7.6	51.5	93.4	93.8	50.5	102%
41.2	41.6	41.2	40.9	430.9	264	98.3	97.9	97.9	100.2	30.9	11.4	72.6	10.4	17.3	7.5	52.0	93.4	93.8	49.7	102%
41.6	40.1	41.3	41.1	422.3	285	97.4	97.5	97.5	100.2	30.9	10.7	73.8	10.5	17.2	7.5	52.4	93.2	93.8	48.7	102%
41.8	41.7	43.0	42.7	448.8	292	96.4	97.3	97.4	100.2	30.9	10.9	75.5	10.6	17.3	7.5	53.3	93.1	93.8	48.2	104%
40.5	41.2	41.2	40.5	433.4	305	98.4	97.8	97.7	100.3	29.9	14.5	77.5	10.9	17.2	8.0	53.7	93.1	93.2	48.0	95%
38.5	38.3	38.4	38.2	397.4	256	99.4	98.0	98.0	100.6	28.2	16.9	79.0	10.8	16.6	8.6	54.1	93.3	93.6	47.3	95%
38.8	38.4	38.7	38.1	434.2	250	100.4	97.8	97.9	100.5	26.4	18.9	80.0	10.6	16.3	10.9	54.1	93.2	92.8	43.8	95%
38.6	38.3	38.3	39.1	431.6	195	100.5	98.7	98.7	100.7	24.3	20.3	81.0	10.4	16.2	9.5	53.7	93.2	92.5	42.9	94%
37.2	37.4	36.1	36.7	427.2	258	100.8	98.2	98.5	100.7	22.6	26.0	76.7	15.8	16.0	9.6	54.5	93.3	92.5	44.3	94%
35.9	39.7	35.2	36.6	405.3	241	100.7	97.2	97.5	99.9	21.1	28.6	69.2	22.5	15.7	9.8	55.1	93.2	92.5	47.3	99%
36.1	36.1	36.6	35.9	413.3	237	100.6	98.1	98.1	99.8	21.1	30.5	69.2	23.2	16.7	9.8	56.6	93.2	92.8	48.2	95%
36.3	36.4	36.1	36.1	411.5	241	101.2	98.3	98.3	100.2	21.2	30.5	69.4	25.8	16.8	18.5	58.9	93.3	92.7	48.0	92%
36.0	36.9	36.1	36.0	411.5	237	101.2	98.6	98.5	100.4	20.8	30.4	69.4	28.0	16.7	12.2	60.7	93.3	92.7	47.9	94%
36.5	36.5	35.9	36.1	403.9	238	100.4	98.5	98.5	100.3	19.4	30.2	69.2	28.5	16.5	9.6	61.1	93.2	92.6	47.4	94%
					3828															
					159.5															

MAY 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam	Desuper Steam	HEX Steam	Flash Chamber	Flash Chamber	Acid Outlet	Acid Inlet	
			Flow	Pressure	Temperature	Temperature	Pressure	Temperature	Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
02/05/2001 18:00:00	51.1	37.7	18.0	401	108	87.5	22.0	89.8	89.0	18.0
02/05/2001 19:00	54.4	38.4	18.0	398	108	88.3	21.6	90.2	89.4	17.9
02/05/2001 20:00	55.5	44.1	18.0	399	107	87.4	21.1	89.4	88.6	17.8
02/05/2001 21:00	54.3	41.1	18.0	400	109	88.3	21.3	90.3	89.5	17.8
02/05/2001 22:00	54.9	44.2	18.0	404	108	87.8	21.5	89.6	88.9	17.2
02/05/2001 23:00	52.3	35.3	18.0	401	108	88.0	21.6	90.0	89.3	16.7
03/05/2001 0:00		1.3	7.1	328	101	82.0	20.6	83.3	83.3	17.4
03/05/2001 1:00	1.8		9.0	404	105	86.8	19.7	88.7	88.6	20.1
03/05/2001 2:00	58.4	27.6	9.0	416	107	89.6	19.6	91.4	91.2	21.1
03/05/2001 3:00	54.9	42.6	17.5	396	111	88.5	19.9	90.3	89.6	20.6
03/05/2001 4:00	72.6	58.6	18.0	400	111	88.3	20.3	90.0	89.2	18.0
03/05/2001 5:00	50.8	37.7	18.0	397	109	86.7	20.2	88.6	87.8	18.5
03/05/2001 6:00	44.0	24.5	18.0	401	111	88.5	20.6	90.4	89.7	19.1
03/05/2001 7:00	56.8	36.7	18.0	396	111	89.1	20.8	91.0	90.3	19.6
03/05/2001 8:00	56.3	35.9	18.1	400	110	88.5	21.1	90.4	89.6	20.3
03/05/2001 9:00	53.4	39.6	18.0	401	110	88.1	22.4	89.9	89.0	20.6
03/05/2001 10:00	50.0	30.0	18.0	401	109	87.9	23.2	89.8	89.0	20.7
03/05/2001 11:00	32.3	23.6	18.0	396	107	84.6	20.6	86.5	85.7	20.1
03/05/2001 12:00	57.1	36.7	18.0	398	111	89.4	21.8	91.3	90.5	18.7
03/05/2001 13:00	56.8	36.0	18.0	401	109	87.6	23.0	89.4	88.6	18.5
03/05/2001 14:00	41.5	26.2	18.0	398	109	87.3	23.0	89.1	88.3	18.4
03/05/2001 15:00	52.6	29.8	18.0	400	110	88.9	22.9	90.7	89.9	18.0
03/05/2001 16:00	58.0	40.0	18.0	402	109	87.9	22.7	89.8	88.9	18.0
03/05/2001 17:00	50.2	34.0	18.0	400	109	87.4	22.4	89.4	88.6	17.9
03/05/2001 18:00	47.8	28.4	18.0	403	110	88.3	21.8	90.2	89.4	17.6
	51.2		16.8							

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
	tons	tons	tons	%	%	%	%	%
02/05/2001 18:00:00	7053.0	8742.8	4397.3	93.3	92.7	62.0	9.5	19.5
03/05/2001	3340.8	8585.9	5749.1	93.2	92.6	47.4	19.4	30.2
Change	-3712.2	-156.9	1351.8	-0.1	-0.1	-14.6	9.8	10.7
	17675.8			-14.7			20.5	

24 Hour Production Figures			Assumptions	
Rock Consumed	6689 tonnes	23.2% P2O5 @	20.7% moisture	
H ₂ SO ₄ Consumed	1649 m3		1.83 sg	
Intermediate Acid	1858 m3	38% P2O5 @	1.47 sg	
Weak Acid	178 m3	25.1% P2O5 @	1.33 sg	
Interm. Acid evap.	1051 m3			
Strong Acid produced	737 m3	51% P2O5 @	1.65 sg	
HH Cake produced	6922 tonnes	1.33% P2O5 @	24.9% moisture	
Waste Water	3828 m3	0.95% P2O5 @		
Steam Consumed	399 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P ₂ O ₅	4.8			
t H ₂ SO ₄ / t P ₂ O ₅	2.67 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.65			
Calculated Efficiencies			Simplified	
%P ₂ O ₅ loss	7.6%	7.6%	Note: Only current if HH cake produced	
%P ₂ O ₅ losses calc.	105.7 tons to gypsum & wastewater			

			%P2O5 loss Efficiency	
A	23.22 % P2O5 in rock	Simplified	7.60	92.40
B	31.27 % CaO in rock	Actual	7.56	92.44
C	37.78 % P2O5 in product acid (average value)			
D	0.27 % CaO in product acid (average value)			
E	1.33 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			
			%P2O5 loss Efficiency	
A	23.22 % P2O5 in rock	Simplified	7.60	92.40
B	31.27 % CaO in rock	Actual	7.57	92.43
C	38.49 % P2O5 in product acid (average value)			
D	0.26 % CaO in product acid (average value)			
E	1.33 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			

Assuming 40% only

MAY 2001 – BOTTOM LEFT

03/05/2001 18:00

Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total	
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg		1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	%P ₂ O ₅ contained		20%	20%	40%	40%	40%	52%	52%	
46.3	11.4	16.8	9.4	42.5	60.1	Level new		19.4	30.2	69.2	28.5	16.5	9.6	61.1	
69.2	28.5	16.5	9.6	61.1	51.7	Level old		9.5	19.5	46.3	11.4	16.8	9.4	42.5	
22.9	17.1	-0.2	0.2	18.6	-8.4	P ₂ O ₅ total old		38.5	78.8	450.5	111.2	163.1	130.9	593.0	
		39.7		18.8		P ₂ O ₅ total new		78.2	122.0	673.0	277.4	160.8	133.9	851.8	
														731.0	
														Production if Granulation offline	
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅		
							Weak Acid	200	1.0	20%	1.26	403	2	806	0.248
							Intermediate Acid	1,111	1.8	40%	1.52	973	3	2918	0.381
							Strong Acid	986	1.4	52%	1.68	1394	2	2789	0.353
							P2O5 total	2,297						6514	35.26405
														Production Used by Granulation	
									Conc.		Total				
								m3	P2O5	sg	P2O5				
							Weak Acid	570.0	20%	1.26	144				
							Intermediate Acid	618.5	40%	1.52	376				
							Strong Acid	684.2	52%	1.68	596				
											1116tpd				
							Granulation	split	tph P2O5	tpd P2O5	Ratio	tph DAP	tpd DAP		
							Weak		0.065	8.8	210.6	13.9%	135	3240	
							Intermediate		0.191	25.8	618.84	40.7%			
							Strong		0.213	28.8	690.12	45.4%			
									0.469	63.315	1519.56	100%			
								m3							
							Weak		34.8						
							Intermediate		42.4						
							Strong		33.0						
														Amount of P2O5 contained in all 7 storage tanks when full	
							Description	Storage	sg	Acid	P ₂ O ₅				
								m ³	t/m ³	tons	tons				
							Weak Acid	3200	1.26	4032	806.4				
							Intermediate Acid	4800	1.52	7296	2918.4				
							Strong Acid	3200	1.676	5363	2788.9				
											6513.7				
							Acid consumption	2.6t (100% H ₂ SO ₄) per t P ₂ O ₅							
							Tons H ₂ SO ₄ required	16936 tons as 100% sulphuric acid							
							Tons H ₂ SO ₄ required	17193 tons as 98.5% sulphuric acid							

MAY 2001 – BOTTOM RIGHT

13/06/2001 18:00 Start Time

14/06/2001 18:00 Finish Time

Clear Old

Update

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry		Rock Feed (weighbelt)	Reactor 1A	Reactor 1B	Reactor 1C	Reactor 2	H ₂ SO ₄ to Acid Mixer B	H ₂ SO ₄ to Acid Mixer A	Recirculation Slurry	Reactor 2 Temperature	Cooler Vacuum A	Cooler Vacuum B	Reactor 2 Level	Return Acid Mixer A	Return Acid Mixer B	HH Filter Feed	HH Filter Feed	HH Filter Feed	HH Filter Feed
	Filter No. 1 sg	Filter No. 2 sg		agitator amps	agitator amps	agitator amps	agitator amps	(FIC25001)	(FIC25002)	(FIC25003)	(TI25004)	(PI25002)	(PI25003)	(LI25001)	(FIC30004)	(FIC35004)	A (FIC25004)	B (FIC25005)	C (FIC25006)	D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
13/06/2001 18:00:00	1.72	1.69	313.3	247.0	292.0	147.5	41.0	36.2	36.2	2306.9	98.8	46.7		69.9	134.2	134.1	115.2	114.9	115.1	115.0
13/06/2001 19:00	1.72	1.69	309.2	237.0	287.0	136.8	42.5	39.7	39.7	2303.0	99.8	47.4		69.9	134.0	134.0	115.0	115.0	115.0	114.6
13/06/2001 20:00	1.72	1.69	308.4	242.5	291.0	140.6	43.5	36.9	36.8	2301.9	99.3	46.9		70.4	134.0	133.9	114.8	114.8	114.9	114.9
13/06/2001 21:00	1.72	1.69	311.8	242.5	288.0	142.6	46.0	37.6	37.6	2300.0	99.7	47.1		71.3	134.2	134.1	115.0	115.3	115.3	115.0
13/06/2001 22:00	1.73	1.69	300.0	248.0	301.0	141.2	41.5	36.7	36.6	2303.9	99.7	46.9		69.9	134.0	133.7	115.4	115.2	115.0	115.0
13/06/2001 23:00	1.72	1.69	308.2	247.0	293.5	143.4	43.5	37.4	37.4	2300.8	99.6	46.7		69.3	134.2	133.8	115.1	114.8	114.9	114.4
14/06/2001 0:00	1.72	1.69	305.6	244.0	295.0	143.8	42.5	35.6	35.7	2301.5	99.6	47.0		71.7	134.3	134.0	115.0	114.8	115.0	115.4
14/06/2001 1:00	1.72	1.69	307.6	248.5	292.5	143.6	44.5	36.9	36.9	2300.3	99.6	46.9		71.2	134.0	134.0	115.2	114.9	114.7	114.9
14/06/2001 2:00	1.72	1.69	306.4	242.5	282.5	139.2	43.5	33.6	33.6	2298.3	99.5	46.7		70.4	134.1	133.8	115.3	115.1	114.9	115.0
14/06/2001 3:00	1.71	1.69	361.3	245.5	300.5	141.7	42.5	43.3	43.3	2688.9	99.3	52.1	53.7	69.0	164.1	163.9	135.4	135.2	135.1	134.2
14/06/2001 4:00	1.71	1.69	374.4	245.5	305.0	144.3	40.5	37.1	37.4	2709.9	99.3	52.1	54.0	70.8	163.9	163.6	136.0	134.5	136.3	135.0
14/06/2001 5:00	1.71	1.69	363.0	245.0	295.0	137.0	40.0	42.9	42.9	2709.6	99.3	52.2	54.0	71.7	163.7	164.3	136.5	135.5	136.7	135.5
14/06/2001 6:00	1.71	1.68	360.7	234.0	286.5	144.9	41.5	42.7	42.7	2709.9	99.3	52.3	54.0	72.4	163.5	163.6	137.5	135.9	136.6	136.1
14/06/2001 7:00	1.71	1.67	365.8	244.0	291.0	143.4	40.5	42.7	42.7	2713.4	99.2	52.1	53.6	73.3	164.3	164.0	136.0	136.3	136.7	136.1
14/06/2001 8:00	1.71	1.68	262.4	253.5	298.0	144.4	43.0	21.4	42.7	2140.5	98.5	51.1	52.7	75.2	164.2	82.2	135.9	136.6	84.9	135.9
14/06/2001 9:00	1.71	1.67	273.1	251.0	305.5	143.8	43.0	21.1	42.4	2029.2	97.4	50.1	51.0	76.1	164.1	82.0	135.7	135.7	84.9	136.0
14/06/2001 10:00	1.71	1.67	298.9	251.0	291.0	147.0	42.5	22.7	45.5	2167.6	97.4	50.7	51.6	78.8	185.2	97.4	140.9	141.2	1.1	136.0
14/06/2001 11:00	1.71	1.67	280.3	245.5	289.5	149.3	44.5	22.7	45.5	2170.6	97.4	50.6	51.6	82.1	185.4	91.9	146.3	146.0	3.5	146.4
14/06/2001 12:00	1.71	1.68	282.2	248.0	291.0	142.1	46.5	21.9	44.3	2099.1	97.5	50.7	51.7	81.6	170.2	84.6	146.4	146.0		146.0
14/06/2001 13:00	1.71	1.68	278.5	248.0	289.5	140.2	44.5	22.0	44.2	2099.7	97.5	50.7	51.9	81.7	179.3	87.7	146.0	149.7		142.3
14/06/2001 14:00	1.71	1.68	275.9	244.0	289.5	141.9	44.5	22.2	44.8	2097.9	97.7	50.9	52.2	81.8	178.5	87.7	147.2	150.0		142.4
14/06/2001 15:00	1.71	1.68	271.6	247.0	283.0	143.7	43.5	28.0	49.3	2030.5	97.7	51.2	52.3	80.3	164.3	81.8	145.4	150.2	5.7	141.8
14/06/2001 16:00	1.71	1.68	276.3	244.0	291.0	139.5	43.5	21.7	43.1	2033.4	97.5	50.9	51.9	77.4	164.1	81.8	144.7	149.9	85.1	132.4
14/06/2001 17:00	1.71	1.68	335.2	241.0	292.5	143.2	42.5	38.4	38.3	2438.9	97.8	51.2	52.4	77.5	147.5	147.1	108.7	108.8	108.6	108.7
14/06/2001 18:00	1.71	1.67	329.4	234.0	289.5	143.8	41.5	38.9	39.0	2439.3	98.5	51.8	53.2	80.9	153.2	153.1	121.8	126.8	126.8	127.0
Total for shift			6689						1649	2320.3										

JUNE 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower Temp	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
32.8	32.7	32.0	35.7	377.2	155	68.4	99.2	97.1	99.2	21.7	36.7	7.2	64.8	5.2	44.4	14.0	97.2	65.5	91.5	87%
32.8	32.7	32.1	35.7	379.9	163	68.4	99.5	97.0	99.2	21.7	36.2	7.0	66.6	5.2	44.3	12.9	97.2	66.6	91.5	86%
32.8	32.7	32.1	35.6	380.8	229	68.4	99.7	97.5	99.6	21.7	35.4	6.9	68.4	5.2	44.1	12.4	97.2	67.5	91.5	86%
32.8	32.7	32.1	35.6	379.9	172	68.3	100.2	98.0	100.1	21.7	34.5	6.9	70.1	5.1	43.5	12.3	97.0	68.4	91.5	87%
32.8	32.8	32.0	35.7	376.4	171	68.3	100.2	98.1	100.1	21.7	33.4	6.9	71.8	5.1	42.5	12.0	97.2	69.6	91.5	83%
32.1	31.9	31.0	34.9	374.8	167	68.6	100.1	97.9	100.0	21.7	32.0	6.8	73.7	5.1	41.0	12.2	97.4	70.2	91.5	86%
32.0	32.0	31.1	34.9	369.8	240	68.3	100.3	97.9	100.1	21.8	30.5	6.8	75.3	5.1	39.7	12.1	96.4	70.3	91.5	85%
31.9	32.0	30.8	34.8	371.7	183	68.3	100.1	97.7	100.0	21.8	29.2	6.8	76.3	5.1	38.7	12.0	96.2	70.8	91.5	85%
32.0	32.1	30.9	34.9	377.2	168	68.3	100.1	97.7	100.0	21.8	27.7	6.8	78.0	5.1	37.6	12.0	96.2	71.4	91.4	85%
40.0	40.0	40.0	40.9	433.1	226	67.3	100.0	98.0	100.2	21.8	26.4	6.9	80.0	5.1	36.2	11.9	96.1	70.9	91.5	100%
40.0	40.2	39.9	41.1	450.9	226	67.8	100.1	98.0	100.2	21.8	25.4	6.9	81.1	5.1	35.7	12.0	96.1	70.2	91.5	104%
39.0	39.0	39.0	41.4	433.1	277	67.4	99.9	97.9	100.1	21.9	24.6	6.9	82.8	5.1	34.7	12.0	96.1	69.5	91.5	101%
38.9	39.0	39.0	41.5	422.6	229	68.3	99.9	97.8	100.1	21.9	23.9	6.9	84.9	5.1	33.6	12.2	96.1	68.4	91.5	100%
39.0	38.9	39.2	41.6	418.0	236	67.3	100.0	97.9	100.2	21.9	23.0	6.9	86.3	5.1	32.8	11.8	96.2	65.4	91.5	102%
39.0	39.1	24.5	41.5	322.0	212	67.5	99.7	96.7	100.0	21.8	22.6	6.9	87.1	5.1	33.2	12.0	96.6	64.4	91.5	73%
39.0	39.0	24.1	41.5	317.9	208	67.4	98.2	95.3	99.0	21.9	23.0	6.9	89.4	5.4	34.3	12.1	96.6	65.1	91.4	76%
40.0	40.0		41.2	333.8	207	67.4	97.9	94.8	98.1	21.8	23.3	6.7	91.2	5.0	35.2	11.9	96.7	64.4	91.4	83%
41.2	41.2		43.8	347.1	207	67.7	97.8	94.9	97.8	21.7	23.7	6.8	91.7	5.2	36.8	12.1	96.6	63.9	91.3	78%
41.2	41.2		43.2	351.0	209	68.4	97.9	95.1	97.9	21.7	23.0	14.1	88.8	5.1	36.4	12.0	96.7	63.8	91.4	78%
40.9	41.9		41.9	347.9	189	68.1	97.7	94.9	97.8	21.7	21.5	18.8	84.9	5.1	35.6	12.3	96.7	63.9	91.4	77%
40.9	41.8		42.0	350.5	186	67.9	97.7	94.8	97.7	21.7	20.4	23.0	80.2	5.1	35.1	12.0	96.8	62.7	91.4	77%
41.0	41.8		41.8	355.4	189	68.4	97.8	94.9	97.8	21.7	19.1	27.9	75.8	5.4	34.9	12.1	96.8	56.7	91.4	75%
41.0	39.5	38.7	41.9	363.1	217	67.8	97.8	95.0	97.8	21.8	17.4	32.5	71.5	5.4	33.6	12.1	96.7	49.7	91.4	77%
30.2	30.1	32.3	34.0	357.0	219	67.9	97.8	95.4	97.8	21.6	15.6	36.2	66.8	5.2	33.0	11.8	96.7	42.5	91.4	93%
34.8	34.8	34.5	37.8	392.4	273	67.4	98.7	95.7	98.2	21.5	14.2	40.3	61.9	5.1	32.7	11.5	96.7	34.6	91.3	91%
					3828															
					159.5															

JUNE 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam	Desuper Steam	HEX Steam	Flash Chamber	Flash Chamber	Acid Outlet	Acid Inlet	
	Flow		Pressure	Temperature	Temperature	Pressure	Temperature	Temperature	Conductivity	
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m ³ /h	m ³ /h	t/h	kPa	C	C	kPa	C	C	uS/cm
13/06/2001 18:00:00	30.0	18.3	14.0	404	109	87.6	18.3	89.1	88.7	13.9
13/06/2001 19:00	30.0	17.6	14.0	401	110	88.8	18.4	90.3	89.9	14.5
13/06/2001 20:00	29.9	18.8	14.0	400	111	89.6	18.5	91.2	90.7	15.1
13/06/2001 21:00	30.0	17.4	14.0	401	112	90.1	18.4	91.6	91.2	15.5
13/06/2001 22:00	29.9	15.6	14.0	398	112	90.3	18.3	91.7	91.3	15.9
13/06/2001 23:00	30.1	16.8	14.0	401	112	90.3	18.1	91.9	91.5	16.1
14/06/2001 0:00	29.8	17.5	14.0	389	112	90.5	18.0	92.2	91.8	16.0
14/06/2001 1:00	30.1	20.6	14.0	397	112	90.8	17.9	92.2	91.8	15.7
14/06/2001 2:00	30.3	21.6	14.0	399	113	90.9	17.8	92.4	92.0	15.7
14/06/2001 3:00	40.6	21.8	14.0	399	113	92.0	18.1	93.3	92.9	15.5
14/06/2001 4:00	39.3	26.5	14.0	399	110	88.6	18.6	90.3	89.9	15.7
14/06/2001 5:00	29.5	20.4	14.0	398	110	88.3	18.8	90.1	89.7	15.7
14/06/2001 6:00	31.3	16.5	14.0	397	111	89.5	18.6	91.1	90.7	15.6
14/06/2001 7:00	42.6	28.2	16.0	393	114	89.7	19.0	91.6	91.1	15.2
14/06/2001 8:00	41.2	31.2	16.0	394	112	88.2	19.1	89.9	89.3	15.1
14/06/2001 9:00	27.2	17.3	16.0	398	113	88.2	18.6	90.4	89.8	15.6
14/06/2001 10:00	37.7	24.7	16.1	400	115	90.2	18.4	92.2	91.6	15.8
14/06/2001 11:00	44.2	29.8	16.0	398	113	88.6	18.4	90.1	89.6	15.6
14/06/2001 12:00	31.0	19.7	16.0	397	112	87.6	18.4	89.7	89.2	15.4
14/06/2001 13:00	33.3	19.0	16.0	394	114	90.1	18.3	91.7	91.2	15.8
14/06/2001 14:00	42.8	29.9	16.0	399	114	88.9	18.5	90.8	90.2	15.8
14/06/2001 15:00	35.4	27.5	16.0	398	113	88.2	18.6	89.9	89.3	15.4
14/06/2001 16:00	33.8	18.6	17.0	392	115	89.4	18.4	91.4	90.7	14.7
14/06/2001 17:00	42.2	28.9	17.0	395	115	89.0	18.3	91.1	90.4	14.6
14/06/2001 18:00	40.5	23.4	17.5	390	115	89.0	18.4	90.6	90.0	17.6
	38.0		15.1							

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
	tons	tons	tons	%	%	%	%	%
13/06/2001 18:00:00	5881.3	1918.3	1122.0	97.2	65.5	91.5	21.7	36.7
14/06/2001	2639.2	5306.8	1135.6	96.7	34.6	91.3	21.5	14.2
Change	-3242.1	3388.5	13.7	-0.6	-30.8	-0.2	-0.1	-22.5
			9081.6			-31.0		-22.6

24 Hour Production Figures			Assumptions	
Rock Consumed	6689 tonnes		22.7% P2O5 @	20.2% moisture
H ₂ SO ₄ Consumed	1649 m3			1.83 sg
Intermediate Acid	1858 m3		37% P2O5 @	1.46 sg
Weak Acid	178 m3		25.3% P2O5 @	1.34 sg
Interm. Acid evap.	1051 m3			
Strong Acid produced	737 m3		53% P2O5 @	1.69 sg
HH Cake produced	6922 tonnes		2.21% P2O5 @	26.3% moisture
Waste Water	3828 m3		1.94% P2O5 @	
Steam Consumed	399 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P ₂ O ₅	5.0			
t H ₂ SO ₄ / t P ₂ O ₅	2.77 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.61			
Calculated Efficiencies			Simplified	
%P ₂ O ₅ loss	12.3%		12.4%	
%P ₂ O ₅ losses calc.	186.7 tons to gypsum & wastewater			
Note: Only current if HH cake produced				

%P2O5 loss Efficiency				
A	22.74 % P ₂ O ₅ in rock	Simplified	12.39	87.61
B	30.17 % CaO in rock	Actual	12.34	87.66
C	36.70 % P ₂ O ₅ in product acid (average value)			
D	0.24 % CaO in product acid (average value)			
E	2.21 % P ₂ O ₅ (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			
%P2O5 loss Efficiency				
A	22.74 % P ₂ O ₅ in rock	Simplified	12.39	87.61
B	30.17 % CaO in rock	Actual	12.34	87.66
C	37.38 % P ₂ O ₅ in product acid (average value)			
D	0.23 % CaO in product acid (average value)			
E	2.21 % P ₂ O ₅ (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			

JUNE 2001 – BOTTOM LEFT

14/06/2001 18:00														
Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	%	P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%
7.2	64.8	5.2	44.4	14.0	91.3	Level new	21.5	14.2	40.3	61.9	5.1	32.7	11.5	
40.3	61.9	5.1	32.7	11.5	77.0	Level old	21.7	36.7	7.2	64.8	5.2	44.4	14.0	
33.1	-2.9	-0.1	-11.6	-2.5	-14.3	P ₂ O ₅ total old	87.4	147.8	70.0	630.8	50.8	618.9	195.2	1800.9
		30.0		-14.1		P ₂ O ₅ total new	86.8	57.2	391.7	602.2	49.5	456.5	160.5	1804.4
Production if Granulation offline														3.5
						P2O5	days		sg	P ₂ O ₅	No Tanks		P ₂ O ₅	
	1214.3	tons P ₂ O ₅				Weak Acid	144	0.7	20%	1.26	403	2	806	0.179
	3017.5	tons sulphuric acid (98.5%)				Intermediate Acid	1,043	1.7	40%	1.52	973	3	2918	0.358
1013.5						Strong Acid	617	0.9	52%	1.68	1394	2	2789	0.221
60.2	1073.8	tons 20% & 40% P ₂ O ₅ produced				P2O5 total	1,804						6514	27.70195
						Production Used by Granulation			Conc.		Total			
							m3	P2O5	sg	P2O5				
						Weak Acid	570.0	20%	1.26	144				
						Intermediate Acid	618.5	40%	1.52	376				
						Strong Acid	684.2	52%	1.68	596				
										1116	tpd			
						Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
						Weak		0.065	8.8	210.6	13.9%		135	3240
						Intermediate		0.191	25.8	618.84	40.7%			
						Strong		0.213	28.8	690.12	45.4%			
								0.469	63.315	1519.56	100%			
							m3							
						Weak		34.8						
						Intermediate		42.4						
						Strong		33.0						
						Amount of P2O5 contained in all 7 storage tanks when full								
						Description	Storage	sg	Acid	P ₂ O ₅				
							m ³	t/m ³	tons	tons				
						Weak Acid	3200	1.26	4032	806.4				
						Intermediate Acid	4800	1.52	7296	2918.4				
						Strong Acid	3200	1.676	5363	2788.9				
										6513.7				
						Acid consumption	2.6t (100% H ₂ SO ₄) per t P ₂ O ₅							
						Tons H ₂ SO ₄ required	16936 tons as 100% sulphuric acid							
						Tons H ₂ SO ₄ required	17193 tons as 98.5% sulphuric acid							

JUNE 2001 – BOTTOM RIGHT

03/07/2001 18:00 Start Time

04/07/2001 18:00 Finish Time

Clear Old

Update Shift

Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

Time	Rock Slurry Filter		Rock Feed	Reactor 1A agitator	Reactor 1B agitator	Reactor 1C agitator	Reactor 2 agitator	H ₂ SO ₄ to Acid Mixer B	H ₂ SO ₄ to Acid Mixer A	Recirculation Slurry	Reactor 2 Temperature	Cooler		Reactor 2 Level	Return Acid Mixer A	Return Acid Mixer B	HH Filter Feed A	HH Filter Feed B	HH Filter Feed C	HH Filter Feed D
	No. 1 sg	No. 2 sg	(weighbelt)	amps	amps	amps	amps	(FIC25001)	(FIC25002)	(FIC25003)	(TI25004)	Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)	(LI25001)	(FIC30004)	(FIC35004)	(FIC25004)	(FIC25005)	(FIC25006)	(FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
03/07/2001 18:00:00	1.69	1.69	308.3	248.0	288.0	144.5	44.0	46.4	23.1	2169.2	98.5	43.6		78.7	91.8	177.4	149.5	84.9	149.9	150.0
03/07/2001 19:00	1.69	1.69	323.8	250.5	284.0	148.3	45.5	36.9	36.8	2302.8	98.3	43.5		77.5	149.8	149.9	135.1	135.2	135.0	135.0
03/07/2001 20:00	1.69	1.69	354.1	242.5	281.0	144.2	45.0	43.4	43.3	2715.0	99.3	43.7		76.7	180.0	180.2	144.2	144.9	144.8	144.8
03/07/2001 21:00	1.70	1.69	352.1	238.0	295.5	146.7	45.0	43.5	43.4	2711.9	99.7	43.8		77.7	184.8	184.6	154.9	155.2	154.9	154.7
03/07/2001 22:00	1.71	1.70	377.2	238.5	288.0	137.8	46.5	30.2	30.3	2713.3	99.1	42.8		75.8	185.4	185.1	154.8	155.1	150.0	150.1
03/07/2001 23:00	1.71	1.70	370.0	231.5	289.5	140.8	47.5	42.7	42.5	2712.0	99.6	42.5		76.7	184.8	184.9	149.7	140.2	149.8	150.2
04/07/2001 0:00	1.72	1.71	366.1	244.0	286.5	136.1	46.0	42.5	42.6	2712.8	99.5	42.2		77.3	185.0	185.0	149.8	149.9	150.0	150.1
04/07/2001 1:00	1.72	1.71	376.7	233.0	282.5	138.5	47.5	45.9	45.9	2711.5	99.7	41.7		77.2	175.0	174.7	150.0	150.3	150.0	150.3
04/07/2001 2:00	1.73	1.71	373.5	238.0	272.5	143.6	44.0	42.8	42.8	2711.6	99.5	41.7		74.8	174.9	175.0	150.2	149.7	149.9	150.3
04/07/2001 3:00	1.74	1.72	374.6	241.0	281.5	141.9	44.5	42.7	42.8	2683.8	99.6	41.7		72.3	174.9	175.2	150.0	150.2	149.9	150.0
04/07/2001 4:00	1.72	1.71	384.3	238.5	281.0	142.6	45.5	42.8	42.8	2668.3	99.8	41.8		71.7	174.9	174.7	145.0	140.0	145.2	145.3
04/07/2001 5:00	1.71	1.69	382.2	239.5	285.5	136.8	43.0	43.3	43.2	2682.3	99.9	40.9		72.5	165.1	165.1	139.9	139.8	139.6	139.7
04/07/2001 6:00	1.71	1.70	365.5	249.5	284.0	141.1	44.0	43.9	43.8	2677.4	99.7	39.9		72.4	164.8	165.1	140.1	140.2	139.9	140.2
04/07/2001 7:00	1.71	1.70	373.1	244.0	281.5	138.1	44.5	43.7	43.8	2671.2	99.4	39.3		72.0	164.9	164.8	139.7	140.0	140.0	139.9
04/07/2001 8:00	1.71	1.70	365.5	249.5	294.0	145.3	45.5	43.8	43.8	2671.0	99.3	39.2		71.4	164.7	164.9	140.3	139.8	139.9	140.0
04/07/2001 9:00	1.72	1.71	296.5	254.0	289.5	136.9	44.5	23.2	46.4	2168.8	98.2	38.7		74.9	175.8	87.8	145.1	144.9	145.0	85.4
04/07/2001 10:00	1.72	1.71	294.3	245.5	285.0	141.9	44.5	23.2	46.4	2164.7	97.7	38.4		74.8	170.7	85.2	144.8	145.0	144.9	85.0
04/07/2001 11:00	1.73	1.71	299.3	254.0	291.0	135.9	44.5	23.2	46.3	2161.1	97.3	38.2		74.6	170.7	85.1	144.8	145.0	145.3	84.5
04/07/2001 12:00	1.73	1.72	306.2	250.0	299.5	141.7	42.0	23.0	45.9	2164.4	96.9	38.1		74.9	170.9	84.9	145.2	145.2	144.9	85.0
04/07/2001 13:00	1.73	1.72	307.3	249.5	271.5	142.6	49.5	23.0	46.0	2165.8	96.7	38.2		75.5	171.5	85.1	145.4	144.4	144.9	85.3
04/07/2001 14:00	1.74	1.72	306.8	248.0	286.5	138.3	43.0	23.0	46.0	2166.0	96.6	38.2		76.3	174.1	87.9	144.9	144.9	145.0	84.9
04/07/2001 15:00	1.74		219.3	240.0	285.5	139.8	45.5	43.1	43.0	2166.4	97.1	38.5		74.4	164.1	163.9	140.5	140.5	140.0	140.1
04/07/2001 16:00	1.74	1.72	354.9	241.0	277.0	145.9	46.5	42.2	42.2	2639.8	97.5	38.9		72.9	161.9	161.4	137.0	137.1	131.6	136.7
04/07/2001 17:00	1.74	1.72	363.8	239.5	285.5	138.8	45.5	42.3	42.3	2674.2	98.0	39.1		74.7	161.5	161.4	136.7	136.9	131.7	136.9
04/07/2001 18:00	1.74	1.73	352.1	238.0	280.0	140.2	44.5	42.3	42.3	2701.2	98.3	39.1		75.6	161.8	161.6	137.0	137.1	132.4	136.6
Total for shift			6689						1649		2521.5									

JULY 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Reactor 1A Cooling Tower Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production	
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
41.2	33.0	42.0	42.0	398.5	143	69.8	99.3	96.4	98.8	23.4	17.3	7.7	61.0	6.2	7.5	17.4	18.2	8.0	42.1	86%
34.9	35.3	35.1	35.0	474.3	171	69.4	98.8	96.4	98.6	22.4	20.9	7.6	61.6	6.3	7.2	17.2	17.9	8.5	42.8	90%
38.1	38.1	38.1	38.0	491.6	169	68.3	99.3	97.6	99.2	21.4	25.9	7.9	58.6	6.6	7.4	17.2	17.8	8.5	43.6	98%
36.6	37.0	37.0	37.1	511.8	172	68.3	100.1	98.2	99.8	20.4	26.8	7.8	57.0	6.7	7.4	16.7	17.7	8.4	44.5	98%
37.0	37.0	37.0	37.0	495.0	183	69.8	100.2	98.4	100.2	19.3	26.5	7.9	56.4	6.5	7.4	16.3	17.7	8.6	45.4	105%
37.3	37.1	37.0	37.0	461.5	173	68.1	100.1	98.2	99.9	18.2	26.5	8.0	56.6	6.9	7.4	16.3	17.5	8.7	46.3	103%
37.0	37.0	36.9	37.0	465.7	179	67.3	100.0	98.0	99.9	17.1	26.5	8.1	56.9	6.8	7.3	15.9	17.0	9.3	46.9	102%
36.8	37.0	37.0	37.0	462.5	175	67.8	100.0	98.0	99.9	16.0	26.5	7.9	57.3	7.0	7.5	15.7	17.3	9.2	48.0	105%
37.1	37.1	37.0	37.0	462.2	192	69.3	100.1	98.2	99.9	14.8	26.4	7.9	58.3	6.9	7.5	16.8	17.3	9.3	48.8	104%
36.8	37.0	37.0	37.0	466.3	195	69.3	100.0	98.2	99.9	13.7	26.5	8.1	59.5	7.0	7.5	16.7	17.2	9.2	50.3	104%
37.7	37.9	37.9	38.0	456.3	190	68.2	100.2	98.3	100.0	12.7	26.4	7.9	59.9	7.2	7.5	17.4	17.3	9.2	49.8	107%
38.0	38.1	38.0	37.9	433.4	189	68.1	100.5	98.4	100.1	11.5	26.4	8.1	60.6	7.0	7.5	18.5	17.1	9.0	48.7	106%
37.9	38.1	38.0	38.0	433.4	190	69.3	100.6	98.7	100.3	10.6	26.5	8.1	61.9	7.1	7.7	19.1	17.4	9.0	48.9	102%
37.8	38.2	38.0	38.0	434.4	186	69.3	100.2	98.4	100.2	12.2	26.9	8.3	63.3	7.3	7.7	19.7	17.1	9.1	48.5	104%
38.4	37.9	37.9	38.0	437.1	199	79.8	100.1	98.3	100.0	16.2	26.0	8.2	64.5	7.2	7.8	20.7	17.1	9.2	47.7	102%
40.0	40.0	40.5		335.0	193	80.3	99.5	96.7	99.4	19.9	24.7	8.3	64.7	7.0	8.0	21.2	17.6	9.3	47.4	82%
41.0	40.6	40.4		351.0	151	89.3	98.7	95.7	98.5	24.1	22.8	7.7	64.1	7.1	7.6	20.7	18.1	9.4	48.3	82%
40.4	40.5	40.4		348.5	184	80.4	98.1	95.0	97.9	27.0	21.3	7.6	60.5	6.4	7.5	21.2	18.3	8.6	49.2	83%
40.4	40.3	40.5		360.6	188	82.4	97.6	94.8	97.5	30.2	19.8	6.7	56.7	5.8	7.0	21.8	18.4	8.7	50.4	85%
40.3	40.8	40.4		365.5	152	87.4	97.3	94.5	97.1	33.2	17.8	6.7	53.4	5.5	6.9	22.0	18.2	8.7	51.9	85%
41.2	40.5	40.5		368.0	182	94.4	97.0	94.3	96.9	33.2	16.0	6.8	51.5	5.5	6.7	22.3	18.4	8.2	53.4	85%
37.8	37.9	38.0	38.0	480.2	169	94.4	96.7	94.3	96.8	33.2	15.1	7.6	51.7	5.9	7.2	23.0	18.4	8.1	54.8	61%
38.7	38.2	36.8	38.0	465.1	188	94.4	98.0	96.3	97.8	33.4	14.0	8.0	52.2	6.3	7.6	23.8	18.2	7.8	54.8	99%
37.8	37.9	36.8	38.0	464.2	182	94.4	98.1	96.5	98.2	33.6	12.6	8.0	52.2	6.0	7.6	24.6	18.2	8.2	54.7	101%
37.6	37.9	36.8	38.0	468.2	181	93.7	98.3	96.6	98.4	33.7	11.4	7.5	53.6	5.9	10.0	23.2	18.1	8.3	54.5	98%
					3828															
					159.5															

JULY 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
03/07/2001 18:00:00	28.0	12.1	14.0	350	112	88.7	16.8	90.3	89.8	33.5
03/07/2001 19:00	36.8	19.6	16.1	349	114	88.5	16.3	90.4	89.8	18.5
03/07/2001 20:00	37.3	19.7	16.0	340	113	87.3	16.1	88.9	88.3	19.4
03/07/2001 21:00	30.2	10.2	15.9	355	114	87.9	15.9	89.7	89.1	15.9
03/07/2001 22:00	39.8	18.9	16.0	371	115	88.8	16.0	90.4	89.8	16.0
03/07/2001 23:00	39.8	20.4	17.1	391	115	87.4	16.1	89.2	88.5	16.5
04/07/2001 0:00	38.0	17.4	19.0	377	119	88.6	16.3	90.6	89.7	16.0
04/07/2001 1:00	55.7	26.9	21.1	379	121	89.2	16.8	91.3	90.2	15.3
04/07/2001 2:00	51.4	29.8	20.9	374	119	86.6	16.9	88.5	87.5	15.5
04/07/2001 3:00	43.0	19.8	22.1	371	122	88.2	17.1	90.4	89.3	15.1
04/07/2001 4:00	60.2	31.9	23.0	369	123	88.5	17.4	90.8	89.6	14.5
04/07/2001 5:00	59.4	33.5	25.0	368	125	87.7	17.5	90.0	88.7	14.0
04/07/2001 6:00	55.2	27.5	25.1	368	125	87.9	17.5	90.4	89.1	13.8
04/07/2001 7:00	59.1	27.7	25.8	363	127	88.3	17.5	90.7	89.3	13.3
04/07/2001 8:00	61.2	36.0	22.1	371	121	87.2	17.1	89.0	87.9	13.4
04/07/2001 9:00	48.7	23.3	24.5	371	124	88.2	17.5	90.5	89.3	15.1
04/07/2001 10:00	57.4	24.7	25.0	374	126	89.3	17.5	91.7	90.4	17.4
04/07/2001 11:00	67.1	36.3	26.0	367	126	88.1	17.7	90.3	88.9	17.7
04/07/2001 12:00	58.3	30.4	25.9	371	125	87.3	18.1	89.4	88.1	17.4
04/07/2001 13:00	57.5	28.0	26.0	372	127	88.4	18.4	90.7	89.3	16.2
04/07/2001 14:00	56.5	23.7	26.0	372	126	87.6	17.6	89.8	88.5	15.3
04/07/2001 15:00	56.3	27.8	26.2	373	127	88.6	17.8	90.6	89.3	15.5
04/07/2001 16:00	62.2	33.3	26.0	366	127	88.1	18.1	90.3	89.0	15.6
04/07/2001 17:00	18.3	11.6	13.1	410	110	85.6	17.2	87.3	86.8	16.7
04/07/2001 18:00	6.1	6.1		411	101	88.5	36.1	88.7	89.6	16.9
	42.8		21.6							

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
03/07/2001 18:00:00	tons	tons	tons	%	%	%	%	%
	2746.4	5096.3	1040.6	18.2	8.0	42.1	23.4	17.3
04/07/2001	1536.3	4108.6	3744.7	18.1	8.3	54.5	33.7	11.4
Change	-1210.2	-987.7	2704.1	-0.1	0.3	12.4	10.3	-5.9
	9389.5			12.6			4.4	

24 Hour Production Figures			Assumptions	
Rock Consumed	6689 tonnes	23.0% P2O5 @	20.8% moisture	
H ₂ SO ₄ Consumed	1649m3		1.83 sg	
Intermediate Acid	1858m3	38% P2O5 @	1.47 sg	
Weak Acid	178m3	27.8% P2O5 @	1.37 sg	
Interm. Acid evap.	1051m3			
Strong Acid produced	737m3	52% P2O5 @	1.70 sg	
HH Cake produced	6922tonnes	2.34% P2O5 @	27.1% moisture	
Waste Water	3828m3	2.36% P2O5 @		
Steam Consumed	399tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P ₂ O ₅	4.8			
t H ₂ SO ₄ / t P ₂ O ₅	2.70 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.61			
Calculated Efficiencies				
Simplified				
%P ₂ O ₅ loss	13.2%	13.2%	Note: Only current if HH cake produced	
%P ₂ O ₅ losses calc.	208.6 tons to gypsum & wastewater			

			%P2O5 lossEfficiency	
A	23.03 % P2O5 in rock	Simplified	13.24	86.76
B	30.75 % CaO in rock	Actual	13.18	86.82
C	37.27 % P2O5 in product acid (average value)			
D	0.24 % CaO in product acid (average value)			
E	2.34 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			
			%P2O5 lossEfficiency	
A	23.03 % P2O5 in rock	Simplified	13.24	86.76
B	30.75 % CaO in rock	Actual	13.19	86.81
C	37.89 % P2O5 in product acid (average value)			
D	0.23 % CaO in product acid (average value)			
E	2.34 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			

Assuming 40% only

JULY 2001 – BOTTOM LEFT

04/07/2001 18:00														
Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	% P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
7.7	61.0	6.2	7.5	17.4	95.0	Level new	33.7	11.4	7.5	53.6	5.9	10.0	23.2	
7.5	53.6	5.9	10.0	23.2	51.0	Level old	23.4	17.3	7.7	61.0	6.2	7.5	17.4	
-0.2	-7.4	-0.3	2.6	5.8	-44.0	P ₂ O ₅ total old	94.3	69.9	75.3	593.6	60.4	103.9	242.3	1239.6
		-8.0		8.4		P ₂ O ₅ total new	135.7	46.1	73.2	521.6	57.0	139.6	323.2	1296.3
Production if Granulation offline														56.7
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅	
Weak Acid							182	0.9	20%	1.26	403	2	806	0.225
Intermediate Acid							652	1.1	40%	1.52	973	3	2918	0.223
Strong Acid							463	0.7	52%	1.68	1394	2	2789	0.166
P2O5 total							1,296						6514	19.90141
Production Used by Granulation														
								m3	P2O5	sg	Total			
Weak Acid							570.0	20%	1.26		144			
Intermediate Acid							618.5	40%	1.52		376			
Strong Acid							684.2	52%	1.68		596			
											1116	tpd		
Granulation														
Weak							split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
Intermediate								0.065	8.8	210.6	13.9%		135	3240
Strong								0.191	25.8	618.84	40.7%			
								0.213	28.8	690.12	45.4%			
								0.469	63.315	1519.56	100%			
								m3						
Weak									34.8					
Intermediate									42.4					
Strong									33.0					
Amount of P2O5 contained in all 7 storage tanks when full														
Description							Storage	sg	Acid	P ₂ O ₅				
							m ³	t/m ³	tons	tons				
Weak Acid							3200	1.26	4032	806.4				
Intermediate Acid							4800	1.52	7296	2918.4				
Strong Acid							3200	1.676	5363	2788.9				
										6513.7				
Acid consumption							2.6 t (100% H ₂ SO ₄) per t P ₂ O ₅							
Tons H ₂ SO ₄ required							16936 tons as 100% sulphuric acid							
Tons H ₂ SO ₄ required							17193 tons as 98.5% sulphuric acid							

JULY 2001 – BOTTOM RIGHT

26/08/2001 18:00Start Time
27/08/2001 18:00Finish Time

Clear OldUpdate ShiftUpdate

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry Filter No. 1 sg	Rock Slurry Filter No. 2 sg	Rock Feed (weighbelt)	Reactor 1A agitator amps	Reactor 1B agitator amps	Reactor 1C agitator amps	Reactor 2 agitator amps	H ₂ SO ₄ to Acid Mixer B (FIC25001)	H ₂ SO ₄ to Acid Mixer A (FIC25002)	Recirculation Slurry (FIC25003)	Reactor 2 Temperature (TI25004)	Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)	Reactor 2 Level (LI25001)	Return Acid Mixer A (FIC30004)	Return Acid Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
26/08/2001 18:00:00	1.65	1.67	244.8	213.0	260.5	134.7	39.5	28.7	28.7	1762.7	97.6		46.8	78.6	128.6	118.5	96.8	96.8	98.0	96.1
26/08/2001 19:00	1.65	1.67	231.6	204.0	257.5	135.9	38.5	28.4	28.4	1764.5	97.5		46.1	78.1	128.8	119.0	97.0	97.4	98.1	98.1
26/08/2001 20:00	1.65	1.67	239.4	198.5	256.0	132.8	39.5	22.0	22.1	1766.4	97.2		46.1	77.1	129.9	119.9	101.2	98.0	99.1	101.2
26/08/2001 21:00	1.64	1.66	241.7	216.0	260.0	135.0	39.5	28.2	28.3	1763.5	97.5		46.0	74.9	133.2	122.8	101.0	97.7	99.1	101.2
26/08/2001 22:00	1.63	1.66	225.2	202.5	255.0	133.3	40.5	27.8	27.9	1762.4	97.2		45.9	74.1	133.2	123.1	104.8	92.9	92.1	100.7
26/08/2001 23:00	1.64	1.66	236.9	212.0	261.5	136.2	39.5	27.9	27.9	1764.4	97.1		45.8	74.5	133.2	122.9	103.2	97.1	93.9	97.9
27/08/2001 0:00	1.65	1.67	249.4	213.5	259.0	131.7	39.0	27.4	27.2	1765.7	96.9		45.8	75.9	134.8	125.1	104.5	92.7	92.6	96.0
27/08/2001 1:00	1.65	1.66	232.5	214.5	259.0	133.9	39.5	27.6	27.7	1767.6	96.8		45.8	77.3	134.9	124.9	99.8	93.1	91.0	96.0
27/08/2001 2:00	1.65	1.67	197.7	210.5	259.0	136.9	39.0	29.6	29.8	1625.5	96.4		45.7	78.7	120.7	120.2	87.2	89.9	86.9	87.2
27/08/2001 3:00	1.65	1.66	198.1	224.5	256.5	133.4	40.0	34.3	34.3	1629.1	96.3		45.7	79.8	124.9	125.1	87.1	86.2	87.0	86.9
27/08/2001 4:00	1.65	1.66	198.8	212.0	253.5	137.7	40.0	32.4	32.1	1492.3	96.5		45.7	62.5	113.1	113.9	86.9	85.6	85.3	89.2
27/08/2001 5:00				257.5	267.0	132.5	39.5			1096.6	91.0		99.9	85.0	113.3	113.0	85.3	85.0	85.1	84.8
27/08/2001 6:00	1.65	1.66	197.7	228.5	257.5	132.3	39.0	25.0	25.0	1489.5	96.7		47.8	72.0	113.0	112.9	84.7	84.5	84.9	85.1
27/08/2001 7:00	1.65	1.66	204.3	210.5	260.0	135.2	38.5	25.0	25.1	1491.0	98.2		99.8	73.8	112.8	113.0	85.3	82.3	84.9	85.2
27/08/2001 8:00				263.0	273.0	133.2	38.5			1100.8	97.2			84.9	0.3		85.2	84.7	84.9	84.9
27/08/2001 9:00																				
27/08/2001 10:00																				
27/08/2001 11:00																				
27/08/2001 12:00																				
27/08/2001 13:00																				
27/08/2001 14:00																				
27/08/2001 15:00																				
27/08/2001 16:00																				
27/08/2001 17:00																				
27/08/2001 18:00																				
Total for shift			6689					1649		1591.4										

AUGUST 2001 – TOP LEFT

AUGUST 2001 – TOP RIGHT

	40% Feed Rate	52% Prod Rate	Desuper Steam Flow	Desuper Steam Pressure	HEX Steam Temperature	Flash Chamber Temperature	Flash Chamber Pressure	Acid Outlet Temperature	Acid Inlet Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
26/08/2001 18:00:00	29.0	22.2	13.0	370	104	87.9	17.4	89.3	88.9	13.6
26/08/2001 19:00	29.9	15.8	12.9	365	104	87.9	17.2	89.3	88.9	13.9
26/08/2001 20:00	27.0	20.4	13.1	367	104	87.7	17.5	89.5	89.1	13.6
26/08/2001 21:00	27.3	16.4	13.1	369	104	88.1	17.2	89.5	89.2	13.6
26/08/2001 22:00	29.1	23.2	13.0	339	104	88.0	17.2	89.5	89.1	13.6
26/08/2001 23:00	27.6	20.1	12.9	328	103	87.8	17.3	89.1	88.8	13.9
27/08/2001 0:00	16.1	8.9	10.0	312	102	88.6	17.3	89.7	89.6	13.6
27/08/2001 1:00	34.9	24.0	12.0	367	104	88.2	17.2	89.5	89.1	13.8
27/08/2001 2:00	25.5	10.8	12.0	370	105	88.4	17.2	90.0	89.7	13.3
27/08/2001 3:00	28.6	22.0	12.0	372	104	87.9	17.4	89.2	88.9	12.6
27/08/2001 4:00	24.3	16.6	12.0	370	104	87.7	17.3	89.1	88.8	12.8
27/08/2001 5:00	26.2	17.2	12.0	370	105	88.4	17.3	89.9	89.5	12.9
27/08/2001 6:00	27.6	19.0	12.1	361	104	88.0	17.3	89.3	89.0	13.5
27/08/2001 7:00	25.4	15.1	12.0	367	104	87.6	17.3	89.3	89.0	15.3
27/08/2001 8:00	26.8	16.9	12.0	386	105	88.4	17.4	89.7	89.4	13.9
27/08/2001 9:00										
27/08/2001 10:00										
27/08/2001 11:00										
27/08/2001 12:00										
27/08/2001 13:00										
27/08/2001 14:00										
27/08/2001 15:00										
27/08/2001 16:00										
27/08/2001 17:00										
27/08/2001 18:00										

#DIV/0!

12.3

Assuming 40% only

AUGUST 2001 – BOTTOM LEFT

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
26/08/2001 18:00:00	tons	tons	tons	%	%	%	%	%
27/08/2001	9182.7	8407.4	9553.3	93.4	88.9	48.0	31.6	62.8
Change	-9182.7	-8407.4	-9553.3	-93.4	-88.9	-48.0	-31.6	-62.8
			0.0			-136.9		-94.5

24 Hour Production Figures

Rock Consumed	6689tonnes	21.7% P2O5 @	21.0% moisture
H2SO4 Consumed	1649 m3		1.83 sg
Intermediate Acid	1858 m3	38% P2O5 @	1.49 sg
Weak Acid	178 m3	29.4% P2O5 @	1.39 sg
Interm. Acid evap.	1051 m3		
Strong Acid produced	737 m3	53% P2O5 @	1.73 sg
HH Cake produced	6922 tonnes	4.47% P2O5 @	31.1% moisture
Waste Water	3828 m3	1.94% P2O5 @	
Steam Consumed	399 tonnes		
Process Water	tonnes		
Key Performance			
t Rock / t P2O5	4.6		
t H2SO4 / t P2O5	2.61 (as 100% sulphuric acid)		
t Steam/t 52% P2O5	0.60		

Calculated Efficiencies

%P2O5 loss	25.2%	Simplified	25.3%	Note: Only current if HH cake produced
%P2O5 losses calc.	287.3 tons to gypsum & wastewater			

			%P2O5 loss Efficiency
A	21.70 % P2O5 in rock	Simplified	25.31 74.69
B	29.01 % CaO in rock	Actual	25.22 74.78
C	37.85 % P2O5 in product acid (average value)		
D	0.23 % CaO in product acid (average value)		
E	4.47 % P2O5 (total) in dry HH cake		
F	23.60 % CaO in dry HH cake		
			%P2O5 loss Efficiency
A	21.70 % P2O5 in rock	Simplified	25.31 74.69
B	29.01 % CaO in rock	Actual	25.22 74.78
C	38.43 % P2O5 in product acid (average value)		
D	0.23 % CaO in product acid (average value)		
E	4.47 % P2O5 (total) in dry HH cake		
F	23.60 % CaO in dry HH cake		

27/08/2001 18:00														
Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	%P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
29.8	20.8	0.9	57.7	11.7	76.7	Level new	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
						Level old	31.6	62.8	29.8	20.8	0.9	57.7	11.7	
-29.8	-20.8	-0.9	-57.7	-11.7	-76.7	P ₂ O ₅ total old	127.6	253.4	289.9	202.5	9.1	804.4	162.9	1849.8
		-51.6		-69.4		P ₂ O ₅ total new	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Production if Granulation offline														-1849.8

Production if Granulation offline													-1849.8
			P2O5	days		sg	P ₂ O ₅	No Tanks		P ₂ O ₅			
			Weak Acid	-	0.0	20%	1.26	403	2	806	-		
			Intermediate Acid	-	0.0	40%	1.52	973	3	2918	-		
			Strong Acid	-	0.0	52%	1.68	1394	2	2789	-		
			P2O5 total	-						6514	0		

	1146.1	tons P ₂ O ₅
	3017.5	tons sulphuric acid (98.5%)
1066.9		
72.5	1139.4	tons 20% & 40% P ₂ O ₅ produced

670.0	tons 52% P ₂ O ₅ produced
213.1	tons P ₂ O ₅ lost in HH filter cake
74.2	tons P ₂ O ₅ lost in waste water

Production Used by Granulation

		m3	P2O5	sg	Total P2O5
Weak Acid	570.0	20%	1.26	144	
Intermediate Acid	618.5	40%	1.52	376	
Strong Acid	684.2	52%	1.68	596	
				1116	tpd

Granulation	split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP
Weak	0.065	8.8	210.6	13.9%			
Intermediate	0.191	25.8	618.84	40.7%		135	3240
Strong	0.213	28.8	690.12	45.4%			
	0.469	63.315	1519.56	100%			

74.7%	Filter Recovery Efficiency (Simplified HFT method)
99.4%	Acid produced to Rock Input Efficiency
74.9%	Input - Losses Efficiency

	m3
Weak	34.8
Intermediate	42.4
Strong	33.0

Amount of P2O5 contained in all 7 storage tanks when full

Description	Storage m ³	sg t/m ³	Acid tons	P ₂ O ₅ tons
Weak Acid	3200	1.26	4032	806.4
Intermediate Acid	4800	1.52	7296	2918.4
Strong Acid	3200	1.676	5363	2788.9
				6513.7

Acid consumption 2.6t (100% H₂SO₄) per t P₂O₅

Tons H₂SO₄ required 16936 tons as 100% sulphuric acid
Tons H₂SO₄ required 17193 tons as 98.5% sulphuric acid

AUGUST 2001 – BOTTOM RIGHT

26/09/2001 18:00 Start Time
27/09/2001 18:00 Finish Time

Clear Old Update Update

PHOSPHORIC ACID PLANT DAILY LOGSHEET

	Rock Slurry Filter No. 1 sg	Rock Slurry Filter No. 2 sg	Rock Feed (weighbelt)	Reactor 1A agitator amps	Reactor 1B agitator amps	Reactor 1C agitator amps	Reactor 2 agitator amps	H ₂ SO ₄ to Acid Mixer B (FIC25001)	H ₂ SO ₄ to Acid Mixer A (FIC25002)	Recirculation Slurry (FIC25003)	Reactor 2 Temperature (TI25004)	Cooler Vacuum A (PI25002)	Cooler Vacuum B (PI25003)	Reactor 2 Level (LI25001)	Return Acid Mixer A (FIC30004)	Return Acid Mixer B (FIC35004)	HH Filter Feed A (FIC25004)	HH Filter Feed B (FIC25005)	HH Filter Feed C (FIC25006)	HH Filter Feed D (FIC25007)
	41DI20001.PV	41DI20002.PV	41WI20001.PV	4425AR2501.FV	4425AR2502.FV	4425AR2503.FV	4425AR2504.FV	44FIC25001.PV	44FIC25002.PV	44FIC25003.PV	44TI25004.PV	44PI25002.PV	44PI25003.PV	44LI25001.PV	44FIC30004.PV	44FIC35004.PV	44FIC25004.PV	44FIC25005.PV	44FIC25006.PV	44FIC25007.PV
Time	t/m ³	t/m ³	t/h	amps	amps	amps	%	m ³ /h	m ³ /h	m ³ /h	C	kPa	kPa	%	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h	m ³ /h
26/09/2001 18:00:00	1.67	1.67	356.4	238.5	292.5	142.7	38.5	47.0	47.0	2711.6	99.8	53.6	50.1	77.2	172.1	172.1	144.9	135.3	144.9	145.0
26/09/2001 19:00	1.67	1.67	364.2	235.5	298.0	143.0	39.5	47.2	47.2	2709.8	99.9	52.9	49.8	76.6	172.2	172.0	144.9	134.8	144.9	145.2
26/09/2001 20:00	1.67	1.68	370.8	234.0	289.5	143.3	36.5	45.4	45.6	2710.8	99.5	52.8	49.9	76.0	171.5	171.8	145.1	135.7	145.1	145.1
26/09/2001 21:00	1.67	1.67	380.1	228.5	288.5	141.7	37.0	44.0	44.0	2847.8	99.7	52.6	49.2	75.6	172.1	172.0	144.7	140.3	145.3	144.8
26/09/2001 22:00	1.71	1.72	389.7	222.0	289.5	139.4	38.5	47.2	47.1	2846.6	99.6	52.5	49.3	78.2	172.3	172.1	142.2	140.5	144.7	145.3
26/09/2001 23:00	1.71	1.71	356.1	228.5	296.5	137.7	38.5	45.1	45.1	2714.2	99.7	52.5	49.2	78.3	171.7	172.0	144.7	145.2	144.7	145.0
27/09/2001 0:00	1.71	1.72	363.1	223.0	284.0	142.6	40.0	45.1	45.1	2712.4	99.6	52.5	49.0	76.3	172.1	172.1	145.2	144.8	145.1	144.9
27/09/2001 1:00	1.71	1.72	349.1	217.5	287.0	147.0	38.5	45.3	45.3	2713.9	99.6	52.7	49.1	75.2	172.4	171.8	145.2	145.2	145.0	145.0
27/09/2001 2:00	1.71	1.71	364.6	223.0	289.5	145.3	40.0	45.4	45.2	2717.7	99.6	52.9	49.2	75.2	174.8	174.8	139.9	139.7	140.0	140.0
27/09/2001 3:00	1.71	1.72	356.3	228.5	288.0	146.0	38.0	57.5	58.0	2715.5	99.9	53.1	49.5	77.5	175.1	174.8	141.9	142.0	142.1	141.8
27/09/2001 4:00	1.71	1.72	362.0	228.5	295.5	138.8	40.0	46.5	46.5	2711.4	99.8	52.8	49.2	78.8	174.8	175.1	143.8	143.7	143.8	143.8
27/09/2001 5:00	1.67	1.69	350.2	225.5	285.5	141.4	37.5	48.0	48.3	2713.1	99.9	52.9	49.0	78.1	174.7	174.7	144.0	143.6	144.1	143.8
27/09/2001 6:00	1.67	1.68	355.3	231.0	291.0	141.4	38.0	46.9	46.9	2713.8	99.7	52.6	48.8	75.8	175.1	174.9	147.0	146.9	147.1	146.8
27/09/2001 7:00	1.66	1.68	361.0	230.0	291.0	146.9	40.0	46.3	46.3	2715.9	99.4	52.5	48.5	73.7	175.3	175.3	147.0	147.1	146.9	147.1
27/09/2001 8:00	1.67	1.68	342.7	229.0	302.0	138.3	39.0	45.7	45.7	2676.4	99.1	52.6	48.6	72.7	175.2	149.7	146.7	146.6	130.2	147.3
27/09/2001 9:00	1.65	1.67	272.7	242.5	296.5	143.7	38.5	22.0	44.9	2034.1	99.0	53.5	52.8	72.4	158.9	86.9	147.0	146.8	85.1	147.1
27/09/2001 10:00	1.65	1.66	369.4	231.5	299.0	138.4	39.5	45.4	45.4	2709.5	99.8	53.4	51.9	72.7	171.2	171.2	147.0	141.9	129.8	146.4
27/09/2001 11:00	1.65	1.66	359.6	234.0	290.0	147.7	38.5	45.4	45.4	2710.8	100.0	53.4	51.7	72.3	170.6	171.3	147.1	141.8	147.0	147.4
27/09/2001 12:00	1.66	1.66	355.1	227.5	298.0	140.5	38.0	45.5	45.5	2710.9	100.1	53.3	51.8	70.7	171.1	170.9	147.0	138.4	149.1	149.2
27/09/2001 13:00	1.67	1.67	388.6	235.5	289.5	143.4	38.5	48.8	48.7	2713.3	100.3	53.8	51.9	71.1	171.3	171.0	146.9	133.3	149.1	149.1
27/09/2001 14:00	1.67	1.65	363.5	231.5	285.5	142.7	37.5	52.1	52.2	2710.5	100.5	53.3	51.3	70.4	171.0	170.9	147.0	133.1	149.0	148.7
27/09/2001 15:00	1.66	1.65	381.1	224.5	291.0	143.2	37.0	61.5	22.9	2515.6	98.9	51.7	49.2	63.5			119.7	133.3	149.1	149.0
27/09/2001 16:00	1.66	1.66	364.2	226.0	286.5	141.2	35.5	54.5	55.7	2522.8	100.1	52.3	49.3	64.6			119.8	132.4	143.8	144.1
27/09/2001 17:00	1.67	1.66	357.2	227.5	284.0	141.2	37.0	53.9	54.4	2681.2	99.8	52.5	49.2	69.1	180.9	181.2	146.1	133.5	154.8	155.1
27/09/2001 18:00	1.67	1.66	360.6	227.0	288.0	139.7	38.5	48.0	48.1	2666.4	99.5	52.2	48.6	68.5	181.0	181.2	151.0	132.8	150.0	155.1
Total for shift			6689						1649	2674.8										

SEPTEMBER 2001 – TOP LEFT

Cake Wash A (FIC30005)	Cake Wash B (FIC30006)	Cake Wash C (FIC35005)	Cake Wash D (FIC35006)	HH Filter Cake	Waste Water (LI70002)	Return water from Stack to Cooling Tower Temp	Reactor 1A Temp	Reactor 1B Temp	Reactor 1C Temp	Weak 1	Weak 2	Inter Tank 3	Inter Tank 4	Inter Tank 5	Strong Tank 6	Strong Tank 7	Rock Feed 1	Rock Feed 2	Rock Feed 3	Production
44FIC30005.PV	44FIC30006.PV	44FIC35005.PV	44FIC35006.PV	48WI11001.PV	44FIC80001.PV	48FIC13004.PV	44TI25001.PV	44TI25002.PV	44TI25003.PV	44LI60001.PV	44LI60002.PV	44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	
m³/h	m³/h	m³/h	m³/h	t/h	m³/h															
37.5	33.9	39.4	39.4	458.4	206	182.6	100.4	101.4	100.1	31.9	20.0	47.0	0.4	18.7	18.2	26.5	94.9	64.1	24.4	99%
37.5	35.1	39.4	39.4	450.5	208	19.1	100.5	101.5	100.2	31.5	23.9	45.7	0.1	18.6	17.9	26.1	95.0	54.6	33.6	101%
37.5	35.4	39.6	39.5	447.4	205	183.1	100.6	101.6	100.4	31.2	24.3	44.5	0.1	18.7	18.0	25.7	95.0	45.2	42.5	103%
38.5	36.6	40.5	40.6	452.7	203	116.1	100.5	101.6	100.4	30.9	24.2	45.0	0.1	18.8	17.9	25.4	95.1	35.4	49.0	106%
38.5	36.9	40.6	40.5	452.0	204	105.5	100.4	101.4	100.2	30.7	24.5	44.7	0.1	18.9	18.0	25.4	91.5	29.1	55.6	108%
38.4	37.5	40.4	40.6	462.3	171	180.5	100.3	101.4	100.2	30.5	24.5	45.4	0.1	19.0	18.0	25.2	82.3	28.5	64.1	99%
38.4	37.5	40.5	40.6	464.2	203	4.2	100.1	101.1	100.0	30.4	24.6	45.9	0.1	19.0	18.0	25.2	73.2	28.5	72.1	101%
38.5	37.5	40.6	40.5	461.3	201	183.3	100.0	101.1	99.9	31.6	24.6	48.0	0.1	19.1	18.1	27.4	64.2	28.6	81.2	97%
38.5	37.5	40.5	40.5	441.8	203	182.5	99.9	100.9	99.8	32.9	24.6	50.3	0.1	19.1	18.1	29.4	55.1	28.6	89.9	101%
38.5	37.5	40.4	40.6	435.1	201	74.8	99.9	100.9	99.8	33.2	24.6	51.3	0.1	19.3	18.2	29.4	46.4	29.1	90.5	99%
38.6	37.5	40.5	40.5	446.5	203	185.0	100.2	101.1	100.0	32.7	24.6	51.5	0.2	19.4	18.2	29.8	36.5	30.3	90.5	101%
38.5	38.6	40.5	40.3	442.8	200	16.0	100.3	101.0	99.9	32.1	24.6	51.7	0.3	19.4	18.2	29.5	32.6	31.0	85.2	97%
38.5	38.6	40.2	40.5	446.8	204	176.0	100.3	101.1	100.0	31.1	24.6	52.8	0.2	19.3	18.2	29.0	32.5	37.7	76.3	99%
38.4	38.5	40.6	40.4	442.2	202	180.7	100.1	100.9	99.8	30.2	24.9	53.1	0.2	19.4	18.2	29.9	32.9	47.0	67.0	100%
38.6	38.5		40.5	449.9	204	4.4	99.9	100.7	99.5	29.4	25.0	53.7	0.9	19.6	18.3	29.8	33.5	55.9	57.6	95%
38.0	37.9	24.2	39.9	342.5	201	179.0	99.3	100.0	98.9	26.9	24.6	52.6	0.7	18.6	17.7	29.9	33.2	65.2	50.0	76%
38.0	36.7	35.5	39.8	444.5	197	179.5	99.9	100.9	99.4	25.4	24.4	51.5	0.2	18.3	17.5	29.9	33.0	74.5	41.0	103%
38.0	36.7	43.1	40.1	465.0	200	115.2	100.3	101.3	99.9	24.3	24.1	51.4	0.2	18.3	17.3	29.8	32.5	84.5	31.5	100%
38.0	35.6	43.6	40.4	468.4	181	180.8	100.4	101.6	100.2	22.7	24.7	51.7	0.1	18.1	17.1	30.1	33.9	92.7	22.2	99%
38.0	34.4	43.8	40.5	469.3	140	0.3	100.5	101.7	100.3	21.8	24.8	51.8	0.1	20.8	16.8	30.1	44.4	83.9	20.8	108%
38.0	34.4	43.7	40.5	465.6	137	102.9	100.7	101.9	100.5	20.9	25.3	51.7	0.1	19.3	17.0	30.4	55.3	73.0	21.1	101%
34.1	34.8	43.7	40.6	493.3	199	182.6	99.9	101.7	100.5	19.4	25.9	53.1	0.4	19.0	17.5	30.6	65.6	63.8	21.2	106%
33.9	34.7	43.7	40.4	461.7	199	33.8	100.2	101.2	99.8	17.2	26.4	54.0	0.2	19.1	17.8	30.9	76.4	53.9	21.5	101%
41.5	34.6	46.2	44.0	497.9	199	179.9	100.3	101.6	100.2	16.2	26.4	53.0	0.3	19.1	17.8	31.4	86.1	44.0	21.4	99%
42.6	34.6	46.3	44.0	479.2	199	36.0	100.4	101.7	100.3	15.6	26.6	52.8	0.3	18.8	17.6	31.6	91.9	34.2	21.5	100%
					3828															
					159.5															

SEPTEMBER 2001 – TOP RIGHT

	40% Feed Rate 52% Prod Rate		Desuper Steam	Desuper Steam	HEX Steam	Flash Chamber	Flash Chamber	Acid Outlet	Acid Inlet	
			Flow	Pressure	Temperature	Temperature	Pressure	Temperature	Temperature	Conductivity
	44FIC60001.PV	44FI45003.PV	44FIC11009.PV	44PIC11007.PV	44TI45001.PV	44TIC45003.PV	44PIC45001.PV	44TI45002.PV	44TI45004.PV	44CI45001.PV
Time	m³/h	m³/h	t/h	kPa	C	C	kPa	C	C	uS/cm
26/09/2001 18:00:00	46.9	31.2	22.0	372	116	87.9	17.3	89.8	88.7	11.9
26/09/2001 19:00	49.5	36.5	22.0	372	117	88.0	17.3	90.6	89.5	11.7
26/09/2001 20:00	52.3	34.0	22.0	372	116	88.1	17.3	90.2	89.1	11.5
26/09/2001 21:00	50.4	36.5	22.0	371	116	88.0	17.3	90.0	89.0	11.3
26/09/2001 22:00	50.8	35.6	21.9	367	116	88.4	17.3	90.4	89.3	11.0
26/09/2001 23:00	51.1	41.1	22.0	371	116	87.6	17.3	90.0	88.9	11.8
27/09/2001 0:00	50.5	36.9	22.0	371	116	87.9	17.3	90.1	89.1	12.5
27/09/2001 1:00	63.2	54.7	22.0	370	115	86.5	17.3	88.6	87.6	12.9
27/09/2001 2:00	39.9	27.4	22.0	371	115	87.1	17.2	89.2	88.2	12.8
27/09/2001 3:00	49.8	32.1	22.0	370	118	89.3	17.3	91.8	90.7	12.4
27/09/2001 4:00	57.9	48.9	22.0	369	116	87.5	17.3	89.8	88.7	12.3
27/09/2001 5:00	47.6	35.1	22.0	370	116	87.3	17.3	89.5	88.5	12.3
27/09/2001 6:00	49.2	31.1	21.9	369	117	88.7	17.3	90.7	89.7	11.8
27/09/2001 7:00	58.2	47.2	23.0	351	117	87.3	17.4	89.6	88.6	12.8
27/09/2001 8:00	50.7	36.3	23.0	367	117	87.6	17.3	89.8	88.7	13.9
27/09/2001 9:00	51.9	35.1	23.0	370	118	88.1	17.0	90.2	89.0	15.4
27/09/2001 10:00	52.5	36.4	23.0	362	118	87.6	17.0	89.8	88.7	16.5
27/09/2001 11:00	54.1	31.6	23.0	368	118	88.2	17.0	90.2	89.0	17.0
27/09/2001 12:00	52.5	37.4	23.0	368	118	87.9	17.0	90.1	88.9	16.7
27/09/2001 13:00	51.4	35.2	23.0	368	118	87.9	17.0	90.2	89.1	15.5
27/09/2001 14:00	54.2	42.6	23.0	378	119	88.2	17.2	90.4	89.2	16.2
27/09/2001 15:00	44.2	31.0	21.0	374	116	87.7	17.0	90.0	89.0	14.8
27/09/2001 16:00	52.9	41.1	23.0	356	118	87.6	16.9	89.8	88.7	14.6
27/09/2001 17:00	50.0	39.1	23.0	363	118	87.8	16.8	89.9	88.8	13.5
27/09/2001 18:00	58.1	40.5	23.0	343	118	87.8	17.0	90.0	89.0	13.8
	51.8		22.4							

Date @ 0600	Sulphuric Tank 1	Sulphuric Tank 2	Sulphuric Tank 3	Rock Slurry Tank 1	Rock Slurry Tank 2	Rock Slurry Tank 3	Phos Weak TK6001	Phos Weak TK6002
	43LI10005.PV	43LI10006.PV	43LI10007.PV	41LI20001.PV	41LI20002.PV	41LIC20003.PV	44LI60001.PV	44LI60002.PV
26/09/2001 18:00:00	tons	tons	tons	%	%	%	%	%
	4417.2	8696.1	9036.0	94.9	64.1	24.4	31.9	20.0
27/09/2001	4566.0	8556.9	9016.8	91.9	34.2	21.5	15.6	26.6
Change	148.7	-139.2	-19.2	-3.0	-29.9	-2.9	-16.3	6.5
			22139.7			-32.9		-9.8

24 Hour Production Figures			Assumptions	
Rock Consumed	6689 tonnes	23.6% P2O5 @	20.7% moisture	
H ₂ SO ₄ Consumed	1649 m3		1.83 sg	
Intermediate Acid	1858 m3	39% P2O5 @	1.50 sg	
Weak Acid	178 m3	26.4% P2O5 @	1.35 sg	
Interm. Acid evap.	1051 m3			
Strong Acid produced	737 m3	52% P2O5 @	1.69 sg	
HH Cake produced	6922 tonnes	1.83% P2O5 @	25.4% moisture	
Waste Water	3828 m3	2.66% P2O5 @		
Steam Consumed	399 tonnes			
Process Water	tonnes			
Key Performance				
t Rock / t P ₂ O ₅	4.6			
t H ₂ SO ₄ / t P ₂ O ₅	2.58 (as 100% sulphuric acid)			
t Steam/t 52% P2O5	0.61			
Calculated Efficiencies			Simplified	
%P ₂ O ₅ loss	10.7%	10.7%	Note: Only current if HH cake produced	
%P ₂ O ₅ losses calc.	196.4 tons to gypsum & wastewater			

			%P2O5 lossEfficiency	
A	23.59 % P2O5 in rock	Simplified	10.69	89.31
B	32.51 % CaO in rock	Actual	10.66	89.34
C	38.49 % P2O5 in product acid (average value)			
D	0.19 % CaO in product acid (average value)			
E	1.83 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			
			%P2O5 lossEfficiency	
A	23.59 % P2O5 in rock	Simplified	10.69	89.31
B	32.51 % CaO in rock	Actual	10.66	89.34
C	39.19 % P2O5 in product acid (average value)			
D	0.18 % CaO in product acid (average value)			
E	1.83 % P2O5 (total) in dry HH cake			
F	23.60 % CaO in dry HH cake			

Assuming 40% only

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Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	ASA Feed Tank LI70002		Phos Weak TK6001	Phos Weak TK6002	Phos Inter. TK6003	Phos Inter. TK6004	Phos Inter. TK6005	Phos Strong TK6006	Phos Strong TK6007	Total
44LI60003.PV	44LI60004.PV	44LI60005.PV	44LI60006.PV	44LI60007.PV	44LI70002.PV	sg	1.26	1.26	1.52	1.52	1.52	1.68	1.68	
%	%	%	%	%	%	% P ₂ O ₅ contained	20%	20%	40%	40%	40%	52%	52%	
47.0	0.4	18.7	18.2	26.5	73.5	Level new	15.6	26.6	52.8	0.3	18.8	17.6	31.6	
52.8	0.3	18.8	17.6	31.6	76.5	Level old	31.9	20.0	47.0	0.4	18.7	18.2	26.5	
5.8	-0.1	0.1	-0.5	5.2	3.0	P ₂ O ₅ total old	128.7	80.8	457.2	3.8	181.9	253.3	369.1	1474.8
		5.8		4.6		P ₂ O ₅ total new	63.1	107.1	513.3	3.2	183.2	246.0	441.3	1557.1
Production if Granulation offline														82.3
							P2O5	days		sg	P ₂ O ₅	No Tanks	P ₂ O ₅	
Weak Acid							170	0.8	20%	1.26	403	2	806	0.211
Intermediate Acid							700	1.1	40%	1.52	973	3	2918	0.240
Strong Acid							687	1.0	52%	1.68	1394	2	2789	0.246
P2O5 total							1,557						6514	23.904983
Production Used by Granulation														
									Conc.		Total			
								m3	P2O5	sg	P2O5			
Weak Acid							570.0	20%	1.26	144				
Intermediate Acid							618.5	40%	1.52	376				
Strong Acid							684.2	52%	1.68	596				
										1116	tpd			
Granulation							split	tph P2O5	tpd P2O5	Ratio		tph DAP	tpd DAP	
Weak								0.065	8.8	210.6	13.9%			
Intermediate								0.191	25.8	618.84	40.7%			
Strong								0.213	28.8	690.12	45.4%			
								0.469	63.315	1519.56	100%			
									m3					
Weak									34.8					
Intermediate									42.4					
Strong									33.0					
Amount of P2O5 contained in all 7 storage tanks when full														
Description							Storage	sg	Acid	P ₂ O ₅				
							m ³	t/m ³	tons	tons				
Weak Acid							3200	1.26	4032	806.4				
Intermediate Acid							4800	1.52	7296	2918.4				
Strong Acid							3200	1.676	5363	2788.9				
										6513.7				
Acid consumption							2.6 t (100% H ₂ SO ₄) per t P ₂ O ₅							
Tons H ₂ SO ₄ required							16936 tons as 100% sulphuric acid							
Tons H ₂ SO ₄ required							17193 tons as 98.5% sulphuric acid							

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