

F3f Bis 2-78 **21 MUD SUMMARY BY INTERVAL** WELL: 3/7.3

INTERVAL PHASE 3.6" From 92 R40 to 153.5

Mud type used in this interval : SEA WATER - BENTONITE

• **USEFUL DATA** •

CASINGS	BALANCE OF VOLUMES bbbl on m3	DRILLING
- Diameter : <u>30"</u>	- Initial volume : <u>0</u>	Drilled (m or ft) { from: <u>92</u> to: <u>153.5</u> duration (date) { from: <u>20/06/71</u> to: <u>22/06</u>
- Hanger : _____	- Added volume : <u>160</u>	Footage (m or ft) : <u>61.5</u> in : _____
- Shoe : <u>153</u>	- Jetted volume : <u>160</u>	Average dllg rate _____ drilling hours : <u>9</u>
- Casing : _____	- Losses in formation : _____	Internal casing vol. : <u>24.5m³</u> Losses : _____
- Length : <u>61</u>	- Final volume : <u>0</u>	Pumping rate : <u>4800 l/min</u> <u>1500 gpi</u>

• **MUD CHARACTERISTICS** •

• **CONSUMPTIONS** •

	mini	maxi	average	CHEMICALS	QUANTITY			COST		
					Total m ³ or T	Kg/ft or m drilled	Kg/m ³	Unit Price	Total Cost	%
Weight flow out flow				CAUSTIC	0,5	8,1	3,1	652	326	2
Viscosity M.V. A.V. P.V. Y.P.				BENTONITE	17	276	106	315	5355	25
				G CEMENT	64			213	13632	63
Gels 0' 10'				D 77 material	2,195			1057	2320	10
API MWL HP-MT API Pressure T'				SEA WATER R40	160					
				SEA WATER CEMENT	20,6					
P ₁										
P ₂										
P ₃										
Ca ⁺⁺ (g/l)										
SO4Ca										
Clno										
CaCl2										
% water										
% oil										
oil/water ratio										
% solids										
Solids density										
% Sand										
T °C										

Depth (ft)	Lithology	TOTAL	
			<u>21.633</u>
		Total cost of { Interval : <u>21.633</u> Drilled meter : <u>351,75</u> Currency : <u>U.S. \$</u> Conversion rate used : _____	

F3f Bis 2-78 **MUD SUMMARY BY INTERVAL** WELL : 317.3

INTERVAL 26" From 153.5 to 666 m

Mud type used in this interval : BENTONITIQUE

• USEFUL DATA •

CASINGS	BALANCE OF VOLUMES bbl on m3	DRILLING
- Diameter : <u>20"</u>	- Initial volume : <u>0</u>	Drilled (m or ft) { from: <u>153.5</u> to: <u>666</u> } duration (date) { from: <u>23/06</u> to: <u>27/06</u> }
- Hanger : _____	- Added volume : <u>763</u>	Footage (m or ft) : <u>512.5</u> in : <u>265 f</u>
- Shoe : <u>653</u>	- Jetted volume : <u>763</u>	Average dlig rate <u>19.7 m/h</u> drilling hours : <u>26 h</u>
- Casing : <u>563</u>	- Losses in formation : <u>0</u>	Internal casing vol. : <u>97.5</u> Losses : <u>0</u>
- Length : <u>563</u>	- Final volume : <u>0</u>	Pumping rate : <u>4400 P/min.</u>

• MUD CHARACTERISTICS •

	mini	maxi	average	CHEMICALS	QUANTITY			COST		
					Total m ³ or T	Kg/ft or m drilled	Kg/m ³	Unit Price	Total Cost	%
Weight flow	<u>1.14</u>	<u>1.18</u>	_____	BARITE	<u>150</u>	<u>292</u>	<u>196</u>	<u>134</u>	<u>20100</u>	<u>20.8</u>
Weight flow	<u>1.18</u>	<u>1.30</u>	_____	BENTONITE	<u>66</u>	<u>128</u>	<u>86</u>	<u>328</u>	<u>21648</u>	<u>22.5</u>
Viscosity M.V.	<u>50</u>	<u>100</u>	_____	SONDE	<u>3,175</u>	<u>6.2</u>	<u>4.2</u>	<u>545</u>	<u>1730</u>	<u>1.8</u>
Viscosity A.V.	_____	_____	_____	FCL	<u>2,825</u>	<u>5.5</u>	<u>3.7</u>	<u>511</u>	<u>1444</u>	<u>1.5</u>
Viscosity P.V.	<u>20</u>	_____	_____	STARFLOR	<u>1,525</u>	<u>3</u>	<u>2</u>	<u>4950</u>	<u>7548</u>	<u>7.8</u>
Viscosity Y.P.	<u>16</u>	_____	_____	CNC LV	<u>0,4</u>	<u>0,8</u>	<u>0.5</u>	<u>2314</u>	<u>926</u>	<u>1</u>
Gels 0'	<u>6</u>	_____	_____	BENALOID	<u>0,06</u>	<u>E</u>	<u>E</u>	<u>3777</u>	<u>227</u>	<u>0.2</u>
Gels 10'	<u>36</u>	_____	_____	CEMENTG	<u>160</u>	_____	_____	<u>213</u>	<u>34080</u>	<u>35.4</u>
API WL	<u>6.7</u>	_____	_____	D.75.	<u>4,850</u>	_____	_____	<u>1787</u>	<u>8667</u>	<u>9</u>
API WL HP-HT	_____	_____	_____	% water	<u>89</u>	_____	_____	_____	_____	_____
API WL Pressure T ²	_____	_____	_____	% oil	_____	_____	_____	_____	_____	_____
Ph	<u>9.5</u>	_____	_____	oil/water ratio	_____	_____	_____	_____	_____	_____
Pf	<u>0.4</u>	_____	_____	% solids	_____	_____	_____	_____	_____	_____
P _m (g/l)	_____	_____	_____	Solids density	_____	_____	_____	_____	_____	_____
SO4Ca	_____	_____	_____	% Sand	<u>0.4</u>	<u>4</u>	_____	_____	_____	_____
Clna	<u>22</u>	_____	_____	T °C	_____	_____	_____	_____	_____	_____
CaCl2	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____

Depth (ft)	Lithology	TOTAL	
<u>153</u>	<u>SAND AND CLAY</u>	_____	Total cost of { Interval : <u>96370 \$</u> Drilled meter foot <u>188</u> Currency : <u>US \$</u> Conversion rate used : _____
<u>560</u>	<u>CLAY.</u>	_____	
<u>666</u>	_____	_____	

F3f Bis 2-78 **MUD SUMMARY BY INTERVAL** WELL: 3/7-3

INTERVAL 17 1/2 From 666 m to 1970 m

Mud type used in this interval : Sea Water / SST 202 / FCL

• USEFUL DATA •		
CASINGS	BALANCE OF VOLUMES bbl on m3	DRILLING
- Diameter : <u>23 3/8</u>	- Initial volume : <u>0</u>	Drilled (m or ft) { from: <u>666</u> to: <u>1970</u> duration (date) { from: <u>29/06/81</u> to: <u>29/07</u>
- Hanger : _____	- Added volume : <u>1428</u>	Footage (m or ft) : <u>1304</u> in : <u>2 1 day</u>
- Shoe : <u>1963</u>	- Jetted volume : <u>672</u>	Average dillg rate _____ drilling hours : <u>103*30</u>
- Casing : _____	- Losses in formation: <u>402</u>	Internal casing vol. : <u>160</u> Losses : _____
- Length : _____	- Final volume : <u>356</u>	Pumping rate : <u>3900 l / 2500 psi</u>

• MUD CHARACTERISTICS •				• CONSUMPTIONS •						
	mini	maxi	average	CHEMICALS	QUANTITY			COST		
					Total m ³ or T	Kg/ft or m drilled	Kg/m ³	Unit Price	Total Cost	%
Weight flow	<u>6.13</u>	<u>1.55</u>		BARYTE	<u>1291</u>	<u>990</u>	<u>877</u>	<u>134</u>	<u>172996</u>	<u>48.5</u>
Weight outflow				BENTONITE	<u>68</u>	<u>52</u>	<u>46</u>	<u>315</u>	<u>21420</u>	<u>5.3</u>
Viscosity	M.V.	<u>45</u>	<u>60</u>	CAUSTIC	<u>19.9</u>	<u>15.2</u>	<u>13.4</u>	<u>652</u>	<u>12910</u>	<u>3.2</u>
	A.V.	<u>28</u>	<u>51</u>	FCL	<u>34.75</u>	<u>2.6</u>	<u>23.6</u>	<u>619</u>	<u>21570</u>	<u>5.3</u>
	P.V.	<u>20</u>	<u>43</u>	LC	<u>0.9</u>	<u>0.7</u>	<u>0.6</u>	<u>1004</u>	<u>904</u>	<u>0.2</u>
	Y.P.	<u>16</u>	<u>16</u>	CDC LV	<u>3.4</u>	<u>2.6</u>	<u>2.3</u>	<u>4950</u>	<u>16830</u>	<u>4.1</u>
Gels	0'	<u>3</u>	<u>4</u>	CDC HV	<u>2.5</u>	<u>1.9</u>	<u>1.7</u>	<u>4950</u>	<u>12325</u>	<u>3</u>
	10'	<u>5</u>	<u>28</u>	STAPLOLO	<u>1,675</u>	<u>1.3</u>	<u>1.1</u>	<u>5360</u>	<u>8978</u>	<u>2.2</u>
API WL	API	<u>4.5</u>	<u>5.4</u>	STAPLO R	<u>3,545</u>	<u>2.7</u>	<u>2.4</u>	<u>5700</u>	<u>20207</u>	<u>5</u>
	HP-HT			BICARBONATE	<u>0,900</u>	<u>0.7</u>	<u>0.6</u>	<u>386</u>	<u>347</u>	<u>6</u>
	Pressure			ORIS BAG	<u>1,7</u>	<u>1.3</u>	<u>1.2</u>	<u>5360</u>	<u>9112</u>	<u>2.2</u>
	T°			DEFORTER	<u>0,700</u>	<u>0.6</u>	<u>0.5</u>	<u>3777</u>	<u>3022</u>	<u>0.7</u>
Ph	<u>9.5</u>	<u>9.9</u>		SST 202	<u>13,350</u>	<u>10.2</u>	<u>9</u>	<u>1356</u>	<u>18103</u>	<u>4.5</u>
Pf	<u>ε</u>	<u>0.4</u>		DETERGENT	<u>0,800</u>	<u>0.6</u>	<u>0.5</u>	<u>1806</u>	<u>1445</u>	<u>0.4</u>
P _m ††				MBF FREE	<u>0,850</u>			<u>4500</u>	<u>3825</u>	<u>0.9</u>
Ca (g/l)				LCM	<u>6,305</u>			<u>1345</u>	<u>8480</u>	<u>2.1</u>
SO4Ca				MATROSOLO	<u>0,075</u>			<u>7738</u>	<u>580</u>	<u>ε</u>
Clno	<u>32</u>	<u>38</u>		G CEMENT	<u>273</u>			<u>196</u>	<u>53508</u>	<u>13.2</u>
CaCl2				D 47	<u>0,020</u>			<u>5700</u>	<u>114</u>	<u>ε</u>
% water				D 73	<u>0,154</u>			<u>12616</u>	<u>1943</u>	<u>0.5</u>
% oil				D 75	<u>4,275</u>			<u>1783</u>	<u>7622</u>	<u>1.9</u>
oil/water ratio				O 77	<u>2,195</u>			<u>1057</u>	<u>2320</u>	<u>0.6</u>
% solids	<u>7</u>	<u>23</u>		D 80	<u>0,350</u>			<u>7186</u>	<u>2515</u>	<u>0.6</u>
Solids density				D 81	<u>1,040</u>			<u>5284</u>	<u>5495</u>	<u>1.4</u>
% Sand	<u>0.5</u>	<u>0.4</u>								
T °C										

Depth (ft)	Lithology	TOTAL	
	<u>Shales and</u>		
	<u>Clays</u>		
			<u>406.558</u>

Total cost of { Interval : 406.558
 { Drilled meter/foot : 312 US \$
 Currency : U.S. \$
 Conversion rate used : _____

F3f Bis 2-78 **MUD SUMMARY BY INTERVAL** WELL : 3/7-3

INTERVAL 12 1/4 From : 1970 m to : 3253 m

Mud type used in this interval : See Water, FCL, LC

• USEFUL DATA •		
CASINGS	BALANCE OF VOLUMES bbl on m ³	DRILLING
- Diameter : <u>9 5/8</u>	- Initial volume : <u>344</u>	Drilled { from: <u>1970</u> duration { from: <u>20/07-81</u> (m or ft) { to: <u>3253</u> (date) { to: <u>16/08</u>
- Hanger : _____	- Added volume : <u>491</u>	Footage (m or ft) : <u>1283</u> in : <u>26 days</u>
- Shoe : <u>3241</u>	- Jetted volume : <u>507</u>	Average dillg rate _____ drilling hours : <u>302.30</u>
- Casing : _____	- Losses in formation : <u>10</u>	Internal casing vol. : <u>118</u> Losses : _____
- Length : _____	- Final volume : <u>318</u>	Pumping rate : <u>2400 l/m - 2400 psi</u>

• MUD CHARACTERISTICS •				• CONSUMPTIONS •						
	mini	maxi	average	CHEMICALS	QUANTITY			COST		
					Total m ³ or T	Kg/ft or m drilled	Kg/m ³	Unit Price	Total Cost	%
Weight flow	<u>1.63</u>	<u>1.63</u>		BARITE	<u>459</u>	<u>357</u>	<u>938</u>	<u>134</u>	<u>61372</u>	<u>36.7</u>
Weight flow				BENTONITE	<u>19</u>	<u>14.8</u>	<u>38.6</u>	<u>328</u>	<u>6232</u>	<u>3.7</u>
Viscosity M.V.	<u>50</u>	<u>65</u>		CAUSTIC	<u>7,850</u>	<u>6.1</u>	<u>15.9</u>	<u>545</u>	<u>4278</u>	<u>2.6</u>
Viscosity A.V.	<u>50</u>	<u>71</u>		FCL	<u>33,875</u>	<u>26.4</u>	<u>68.9</u>	<u>551</u>	<u>18665</u>	<u>11.2</u>
Viscosity P.V.	<u>60</u>	<u>57</u>		LC	<u>11,815</u>	<u>9.2</u>	<u>24</u>	<u>1004</u>	<u>11862</u>	<u>7.1</u>
Viscosity Y.P.	<u>20</u>	<u>28</u>		CNC HV	<u>0.1</u>	<u>E</u>	<u>8.2</u>	<u>2612</u>	<u>261</u>	<u>0.2</u>
Gels 0'	<u>2</u>	<u>6</u>		STAPLO LO	<u>0.9</u>	<u>0.7</u>	<u>1.8</u>	<u>4435</u>	<u>3992</u>	<u>2.4</u>
Gels 10'	<u>12</u>	<u>32</u>		STAPFOR	<u>1.35</u>	<u>1</u>	<u>2.7</u>	<u>4950</u>	<u>6683</u>	<u>4</u>
API WL	<u>2.6</u>	<u>4.0</u>		BICARBONATE	<u>0.5</u>	<u>0.4</u>	<u>1</u>	<u>388</u>	<u>194</u>	<u>0.1</u>
HP HT				DEFONER	<u>0.740</u>	<u>0.6</u>	<u>1.5</u>	<u>3777</u>	<u>2795</u>	<u>1.7</u>
Pressure T'				LIFE	<u>0.2</u>	<u>0.2</u>	<u>0.4</u>	<u>181</u>	<u>36</u>	<u>E</u>
Ph				DETERGENT	<u>0.6</u>	<u>0.4</u>	<u>1.2</u>	<u>1806</u>	<u>1084</u>	<u>0.6</u>
Pf	<u>0.3</u>	<u>1</u>		MATERIAL	<u>0.075</u>			<u>7738</u>	<u>580</u>	<u>0.3</u>
Pm	<u>2.2</u>	<u>5</u>		G CEMENT	<u>88</u>			<u>213</u>	<u>18744</u>	<u>11.2</u>
Ca ⁺⁺ (g/l)	<u>0.2</u>	<u>0.4</u>		D 73	<u>1,270</u>			<u>12616</u>	<u>16022</u>	<u>9.6</u>
SDaCa				D 75	<u>1,040</u>			<u>1787</u>	<u>1859</u>	<u>1.1</u>
Clna	<u>38</u>	<u>40</u>		D 80	<u>0,850</u>			<u>7197</u>	<u>6109</u>	<u>3.7</u>
CaCl2				D 81	<u>1,155</u>			<u>528</u>	<u>6103</u>	<u>3.7</u>
% water	<u>74</u>	<u>76</u>								
% oil										
oil/water ratio										
% solids										
Solids density										
% Sand										
T °C										
Depth (ft)	Lithology									
<u>1970</u>	<u>SHALES w/ SAND - LIESTONE AND DOLOMITE</u>			TOTAL					<u>166.871</u>	
<u>2723</u>	<u>DOLOMITE</u>									
<u>2741</u>	<u>SHALES w/ SANDS, LIESTONE - SANDSTONE</u>									
<u>2720</u>	<u>SHALEY LIESTONE w/ SANDS</u>									
<u>3243</u>	<u>SANDS w/ LIESTONE</u>									
<u>3253</u>	<u>LIESTONE</u>									
				Total cost of	Interval : <u>166.871 US \$</u>					
					Drilled meter <u>130</u>					
				Currency	: <u>US \$</u>					
				Conversion rate used	:					

F3f Bis 2-78 21 MUD SUMMARY BY INTERVAL WELL : 3/7.3

INTERVAL 287^m 8 1/2 From 3253^m to 3540^m

Mud type used in this interval : SEA WATER FCL/LC

• USEFUL DATA •	
<p>CASINGS</p> <p>- Diameter : _____</p> <p>- Hanger : _____</p> <p>- Shoe : <u>3241^m</u></p> <p>- Casing : <u>3 5/8</u></p> <p>- Length : _____</p>	<p>BALANCE OF VOLUMES bbl on m3</p> <p>- Initial volume : <u>318</u></p> <p>- Added volume : <u>75</u></p> <p>- Jetted volume : <u>333</u></p> <p>- Losses in formation : <u>-</u></p> <p>- Final volume : <u>-</u></p> <p style="text-align: right;">DRILLING</p> <p>Drilled (m or ft) { from: <u>3253^m</u> duration { from: <u>14.08</u> { to: <u>3540^m</u> (date) { to: <u>24.08</u></p> <p>Footage (m or ft) : <u>287^m</u> in : <u>11 days</u></p> <p>Average dillg rate _____ drilling hours : <u>116^h</u></p> <p>Internal casing vol. : <u>119^{m³}</u> Losses : <u>-</u></p> <p>Pumping rate : <u>1300 l/m @ 2500 Psi</u></p>

• MUD CHARACTERISTICS •				• CONSUMPTIONS •							
	mini	maxi	average	CHEMICALS	QUANTITY			COST			
					Total m ³ or T	Kg/ft or m drilled	Kg/m ³	Unit Price	Total Cost	%	
Weight	In flow	<u>1.64</u>	<u>1.65</u>	<u>1.64^o</u>							
	Outflow	<u>1.65</u>	<u>1.66</u>	<u>1.65^o</u>	BARYTE	109	380.	1453	154	14606	15.6
Viscosity	M.V.	<u>55</u>	<u>70</u>	<u>62</u>	BANTONITE	5	17.46	66	328	1640	1.8
	A.V.	<u>57</u>	<u>71</u>	<u>64</u>	CAUSTIC	1.05	3.65	14	545	572.43	0.6
	P.V.	<u>46</u>	<u>52</u>	<u>49</u>	CHEM HY	.4	1.38	5.3	2612	1044.80	1.1
	Y.P.	<u>22</u>	<u>28</u>	<u>25</u>	STARLO R	.25	0.83	3	4330	1237.50	1.3
					STARLO Lo	.80	1.35	5.3	4435	1774	1.9
Gels	0'	<u>4</u>	<u>10</u>	<u>7</u>	FCL	5.25	18.23	70	531	2892.73	3.1
	10'	<u>16</u>	<u>60</u>	<u>38</u>	LC	5.25	11.32	43	1004	3263	3.5
API WL	API	<u>2.2</u>	<u>3</u>	<u>2.6</u>	DEFOAMER	0.08	0.18	1	3777	302.15	0.3
	HP-HT	-	-	-	LIME	0.04	0.15	0.5	181	7.14	0.008
	Pressure	-	-	-							
	T ^o	-	-	-							
Ph		<u>11.5</u>	<u>11.5</u>	<u>11.5</u>	SEA WATER	50 m ³	-				
	Pf	<u>0.80</u>	<u>0.95</u>	<u>0.90</u>	FRESH WATER	23 m ³	11 m ³				
P _m		<u>3.5</u>	<u>4.5</u>	<u>4</u>							
	Co ⁺⁺ (g/l)	<u>0.80</u>	<u>0.95</u>	<u>0.90</u>	CNT G	131			213	27903	29.9
SO4Co		<u>40</u>	<u>62</u>	<u>51</u>							
	Cine				O 73	1.8 m ³			12616	22708.8	24.3
CaCl2					O 80	.5 "			7187	3593.5	3.8
					O 81	.003 "			5284	26.42	
% water		<u>75</u>	<u>75</u>	<u>75</u>	O 109	.060 "			7001	420.06	0.4
	% oil	<u>0</u>	<u>0</u>	<u>0</u>	O 77	3.773			1057	3988.05	4.3
oil/water ratio					SPACER						
	% solids	<u>25</u>	<u>25</u>	<u>25</u>	NATRO SOL	.125			7738	967.25	1
Solids density					BARYTE	48			134	6432	6.9
	% Sand	<u>0.25</u>	<u>0.25</u>	<u>0.25</u>							
T °C	<u>48</u>	<u>56</u>	<u>52</u>								

Depth (ft)	Lithology	TOTAL	
→ 3251 ^m	MARL		
-	SHALE SLAIN TO DARK		
→ 3504	SANDSTONE		
	ANHYDRATE		
3520 ^m → 3540 ^m	SALT		
		TOTAL	<u>178.03 T</u>
		Total cost of	Interval : <u>93378.81</u>
		Drilled meter foot	<u>325,36</u>
		Currency	<u>\$/ m³</u>
		Conversion rate used	_____