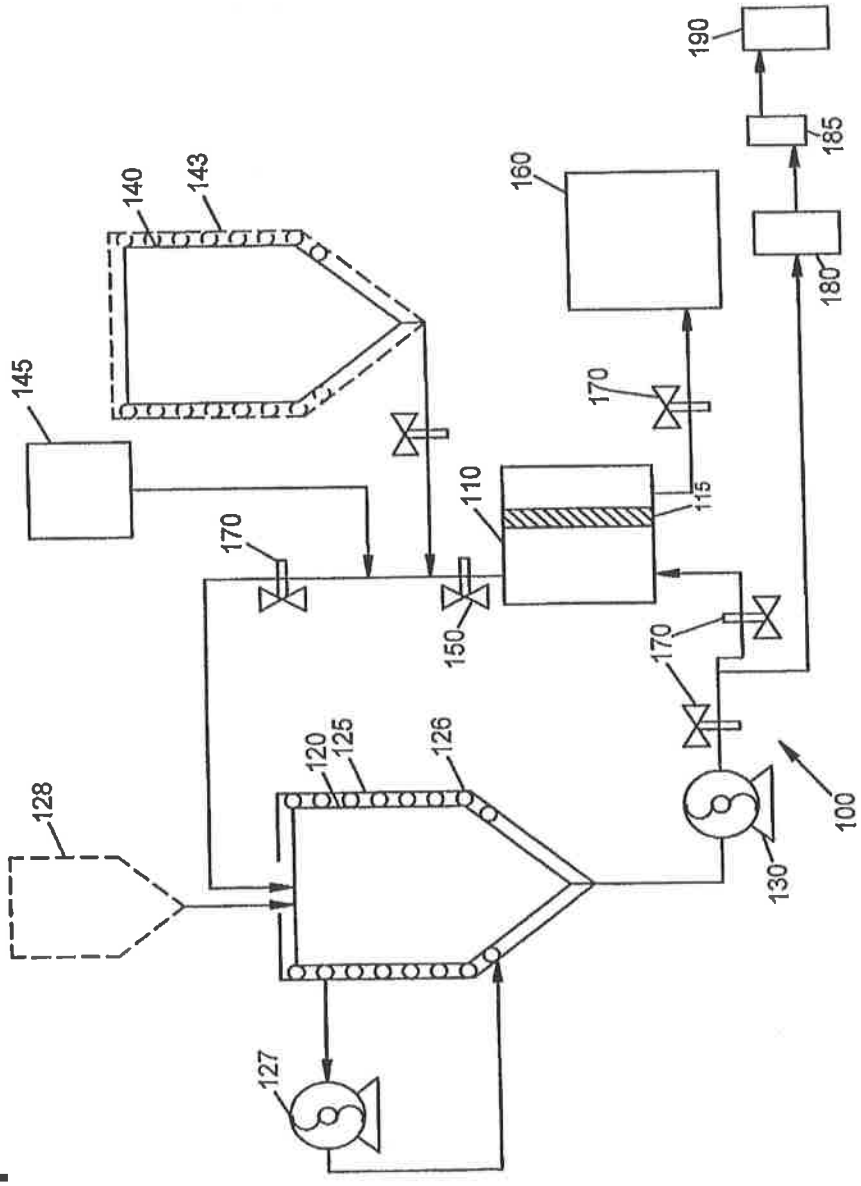

190
185
160
140
143
180
145
170
110
115
170
150
170
120
125
126
128
100
130
127

FIG.1

FIG.2

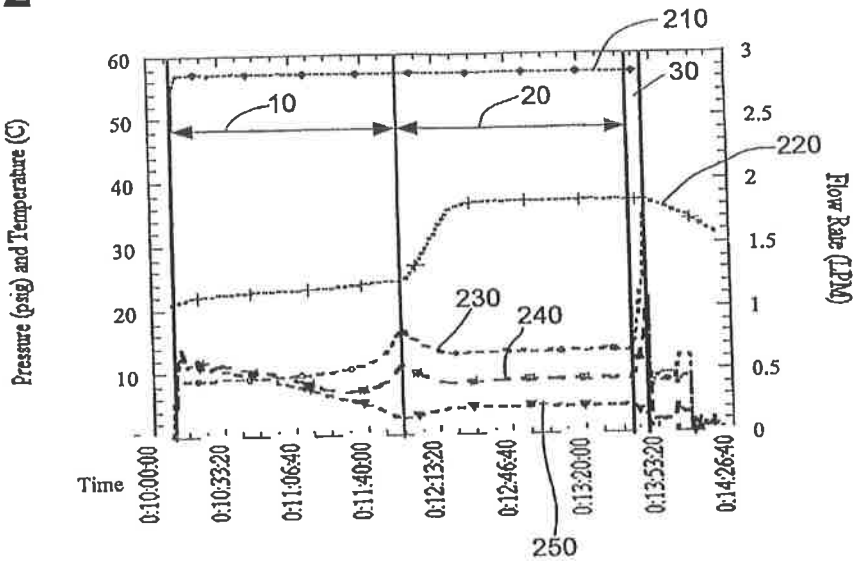

210
30
10
20
220
230
240
250
Pressure (psig) and Temperature (C)
Flow Rate (LPM)
Time
60
50
40
30
20
10
3
2.5
2
1.5
1
0.5
0
0:10:00:00
0:10:33:20
0:11:06:40
0:11:40:00
0:12:13:20
0:12:46:40
0:13:20:00
0:13:53:20
0:14:26:40

FIG.3

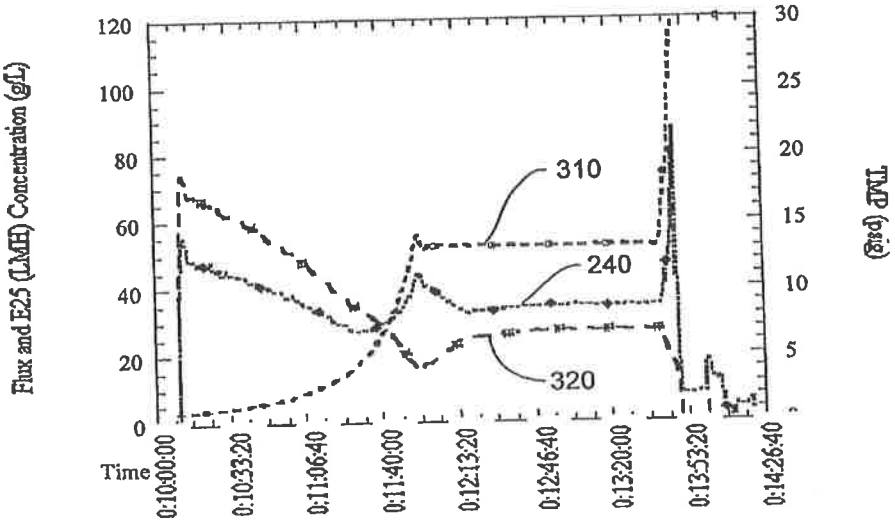

310
240
320
Flux and E25 (LMH) Concentration (g/L)
TMP (psig)
Time
120
100
80
60
40
20
0
30
25
20
15
10
5
0:10:00:00
0:10:33:20
0:11:06:40
0:11:40:00
0:12:13:20
0:12:46:40
0:13:20:00
0:13:53:20
0:14:26:40

FIG.4

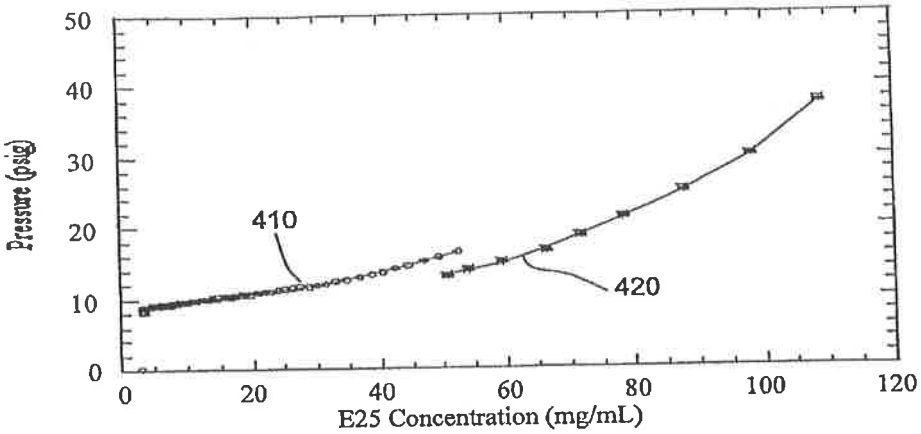

50
40
30
20
10
0
Pressure (psig)
410
420
0
20
40
60
80
100
120
E25 Concentration (mg/mL)

FIG.5

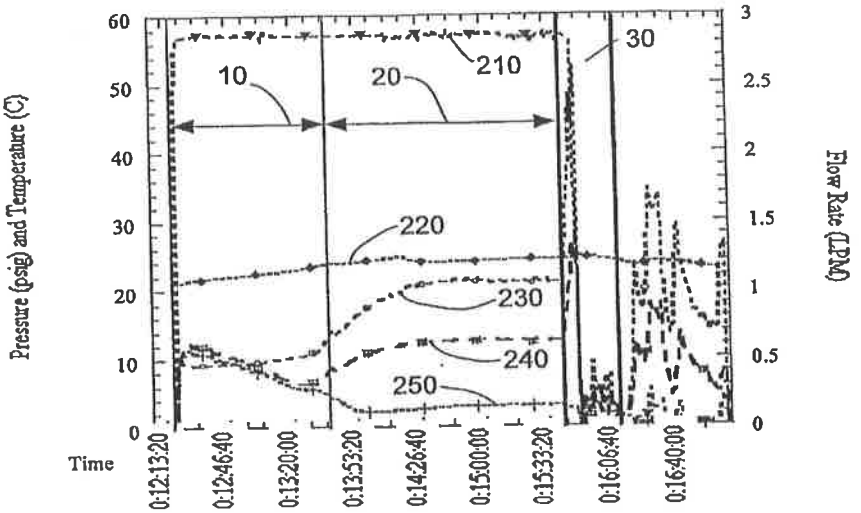

Pressure (psig) and Temperature (C)
Flow Rate (LPM)
Time
10
20
30
210
220
230
240
250
0:12:13:20
0:12:46:40
0:13:20:00
0:13:53:20
0:14:26:40
0:15:00:00
0:15:33:20
0:16:06:40
0:16:40:00

FIG.6

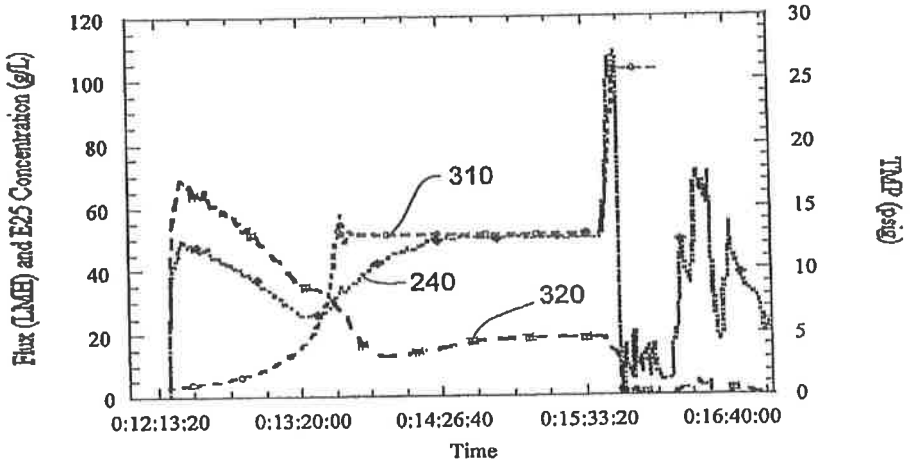

Flux (LMH) and E25 Concentration (g/L)
TMP (psig)
Time
310
240
320
0:12:13:20
0:13:20:00
0:14:26:40
0:15:33:20
0:16:40:00

FIG.7

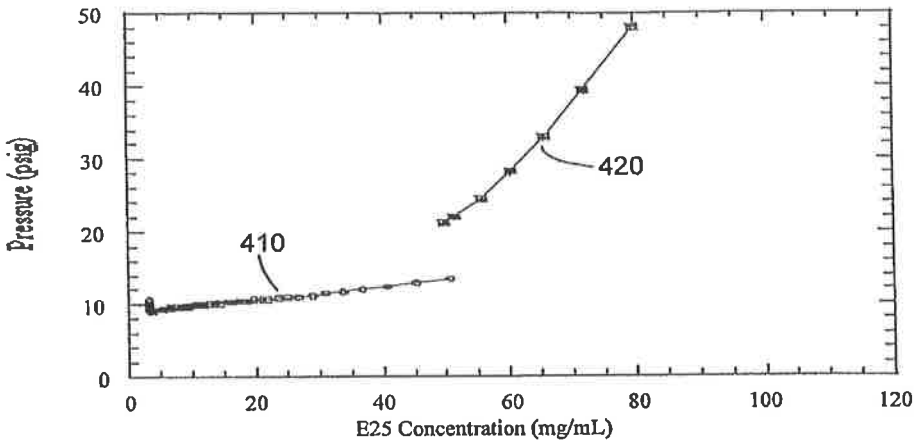

Pressure (psig)
50
40
30
20
10
0
0
20
40
60
80
100
120
E25 Concentration (mg/mL)
410
420

FIG.8

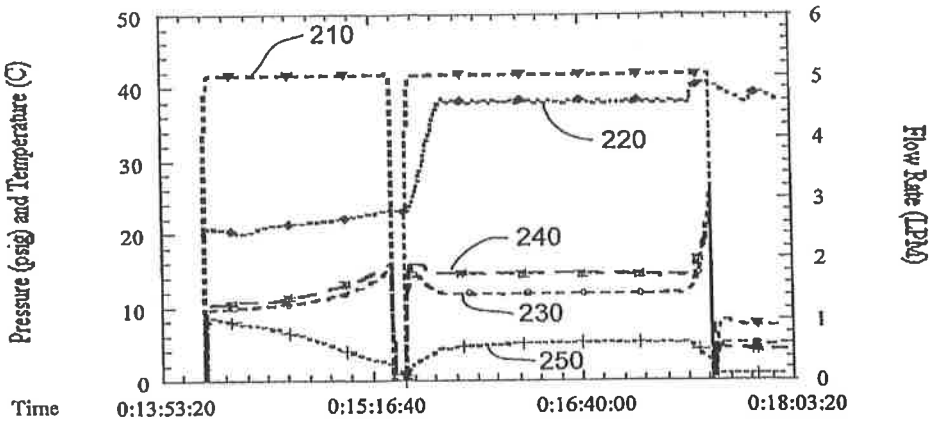

Pressure (psig) and Temperature (C)
Flow Rate (LPM)
Time
0:13:53:20
0:15:16:40
0:16:40:00
0:18:03:20
210
220
240
230
250

FIG.9

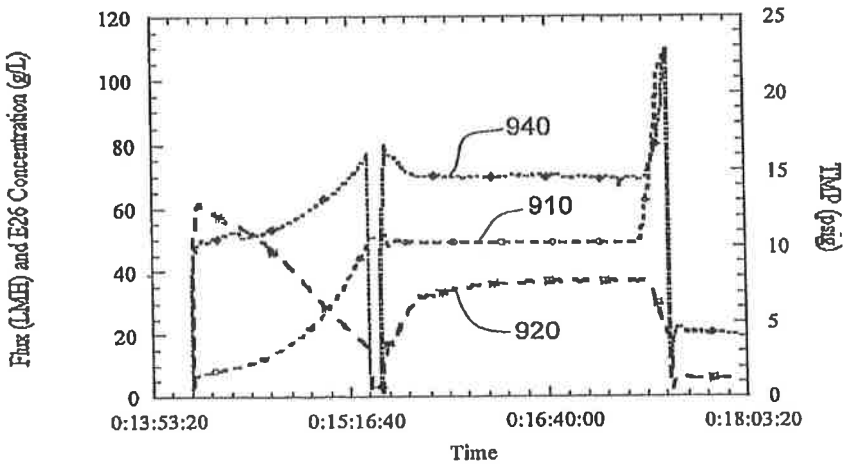

Flux (LMH) and E26 Concentration (g/L)
TMP (psig)
Time
0:13:53:20
0:15:16:40
0:16:40:00
0:18:03:20
940
910
920

FIG.10

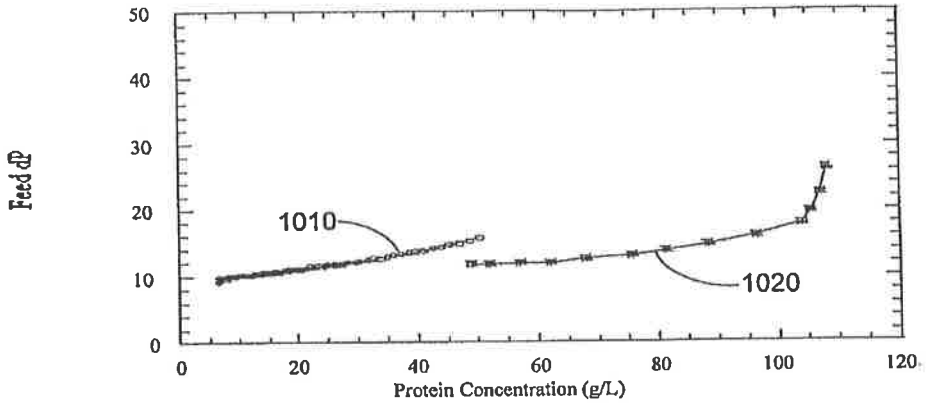

Feed dP
50
40
30
20
10
0
0
20
40
60
80
100
120
Protein Concentration (g/L)
1010
1020

FIG.11

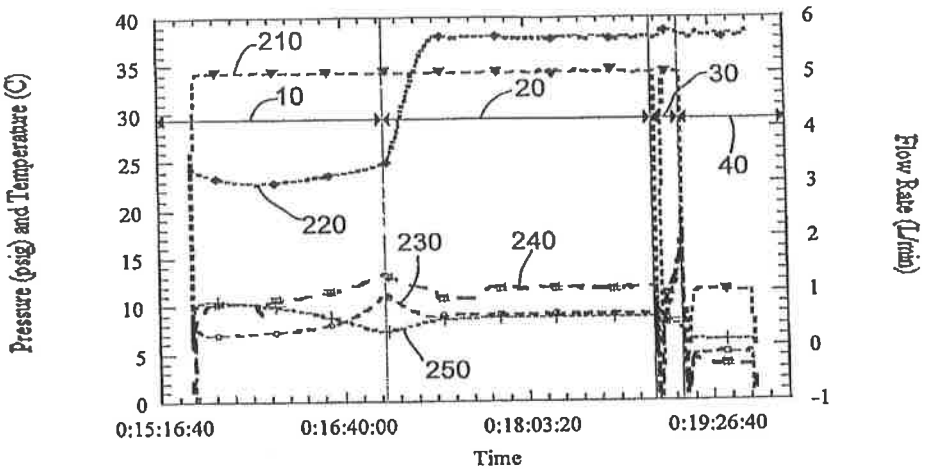

Pressure (psig) and Temperature (C)
Flow Rate (L/min)
Time
0:15:16:40
0:16:40:00
0:18:03:20
0:19:26:40
210
10
20
30
40
220
230
240
250

FIG.12

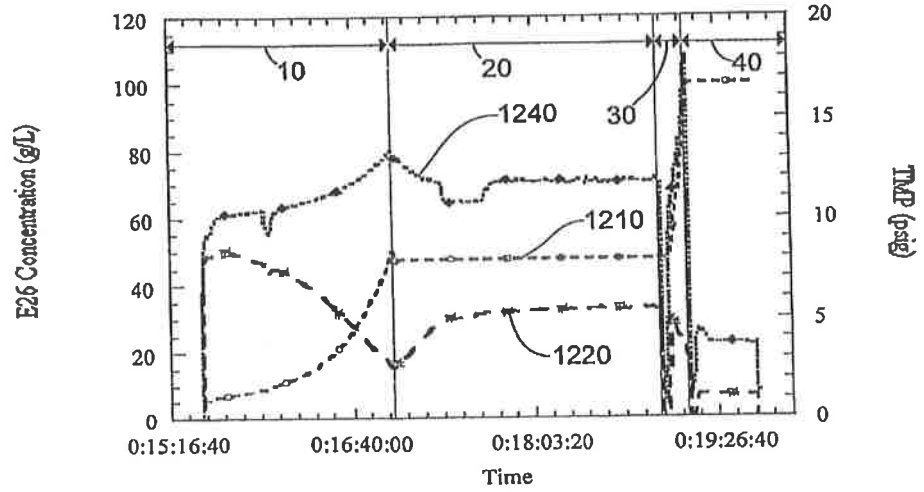

E26 Concentration (g/L)
TMP (psig)
Time
0:15:16:40
0:16:40:00
0:18:03:20
0:19:26:40
10
20
30
40
1240
1210
1220

FIG.13

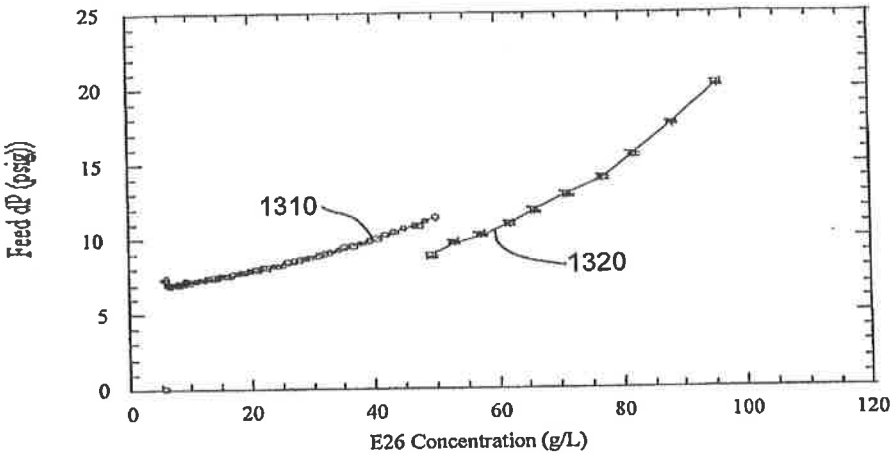

25
20
15
10
5
0
Feed dP (psig)
1310
1320
0
20
40
60
80
100
120
E26 Concentration (g/L)

FIG.14

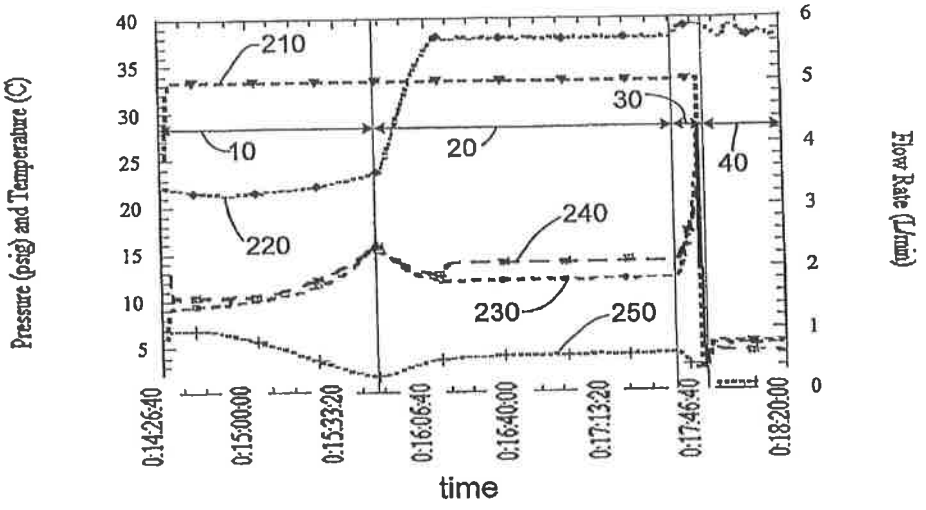

Pressure (psig) and Temperature (C)
Flow Rate (L/min)
time
0:14:26:40
0:15:00:00
0:15:33:20
0:16:06:40
0:16:40:00
0:17:13:20
0:17:46:40
0:18:20:00
210
30
10
20
40
240
220
230
250

FIG.15

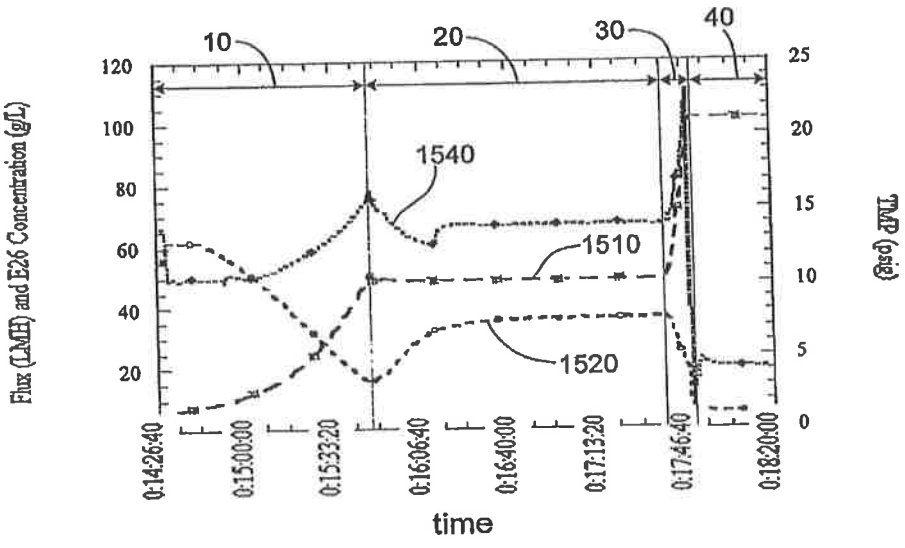

Flux (LMH) and E26 Concentration (g/L)
TMP (psig)
time
0:14:26:40
0:15:00:00
0:15:33:20
0:16:06:40
0:16:40:00
0:17:13:20
0:17:46:40
0:18:20:00
10
20
30
40
1540
1510
1520

FIG.16

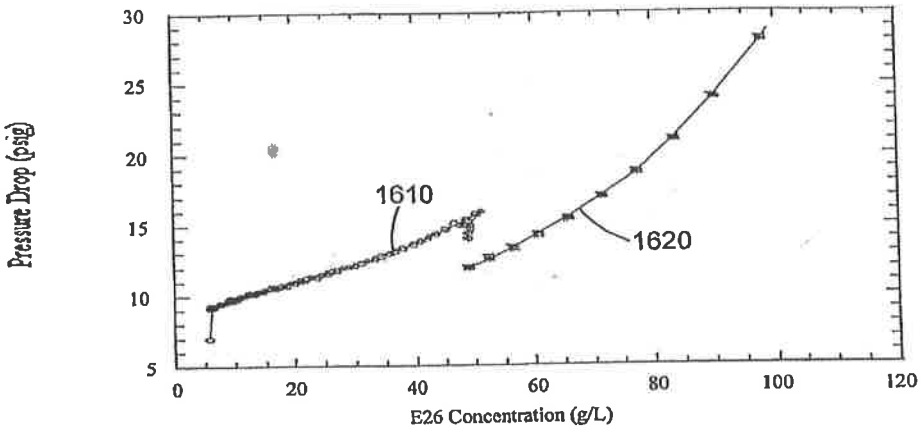

Pressure Drop (psig)
30
25
20
15
10
5
0
20
40
60
80
100
120
E26 Concentration (g/L)
1610
1620

FIG.17

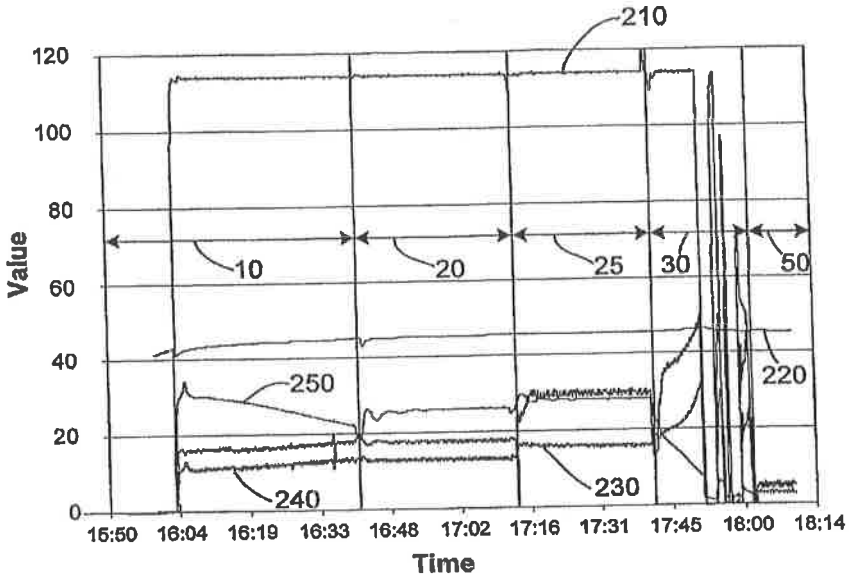

210
120
100
80
60
40
20
0
Value
10
20
25
30
50
220
250
240
230
15:50
16:04
16:19
16:33
16:48
17:02
17:16
17:31
17:45
18:00
18:14
Time

FIG.18

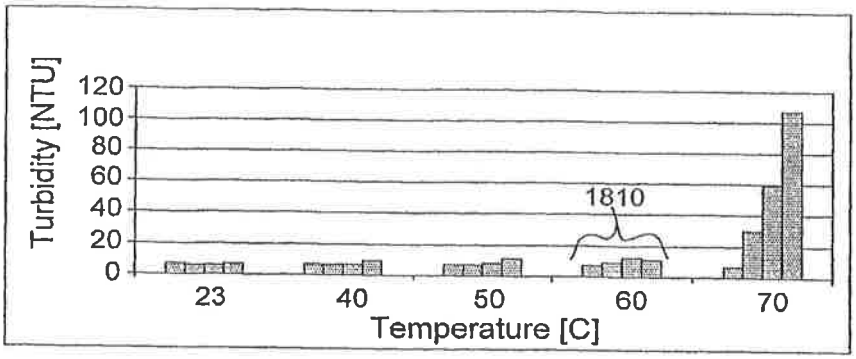

Turbidity [NTU]
120
100
80
60
40
20
0
1810
23
40
50
60
70
Temperature [C]

FIG.19

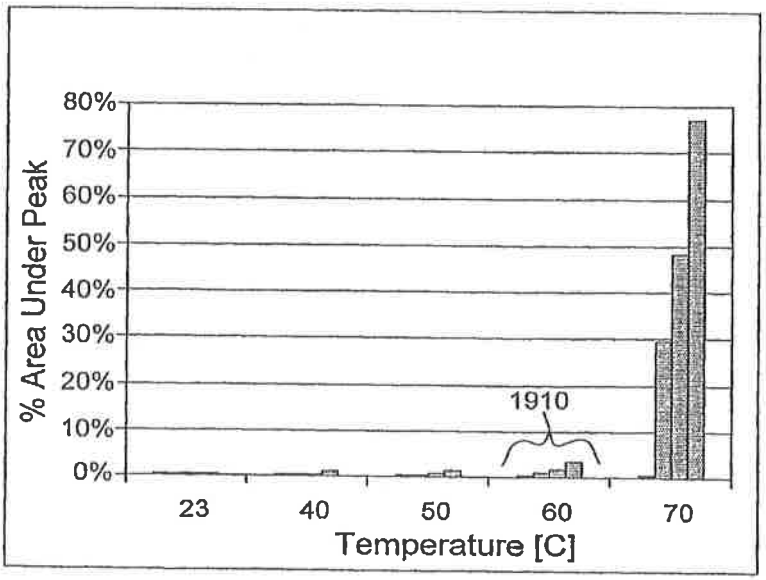

% Area Under Peak
80%
70%
60%
50%
40%
30%
20%
10%
0%
1910
23
40
50
60
70
Temperature [C]

FIG.20

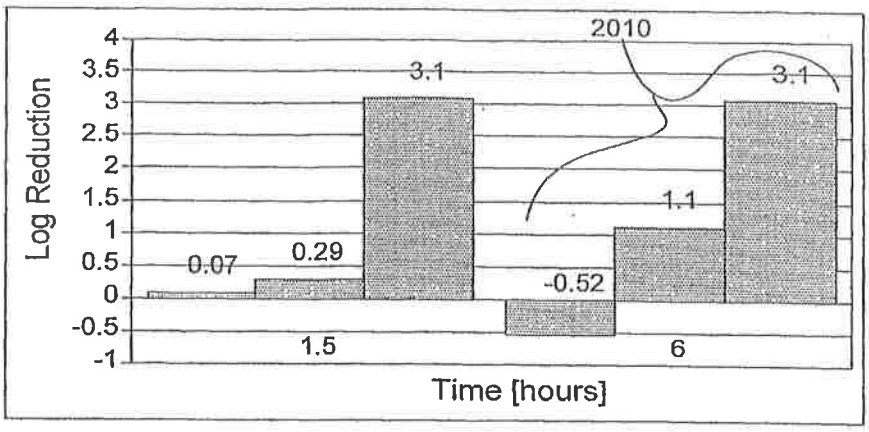


FIG.21

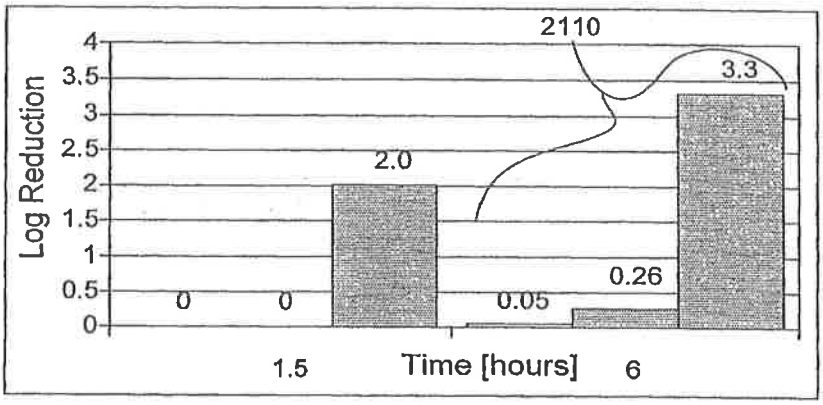
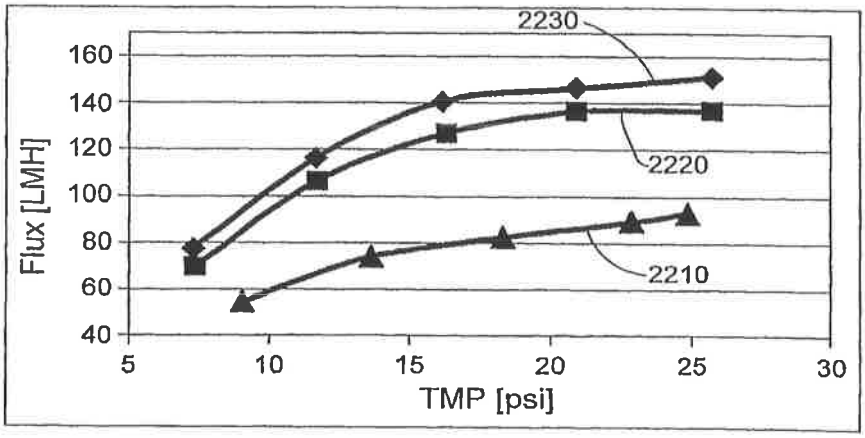


FIG.22



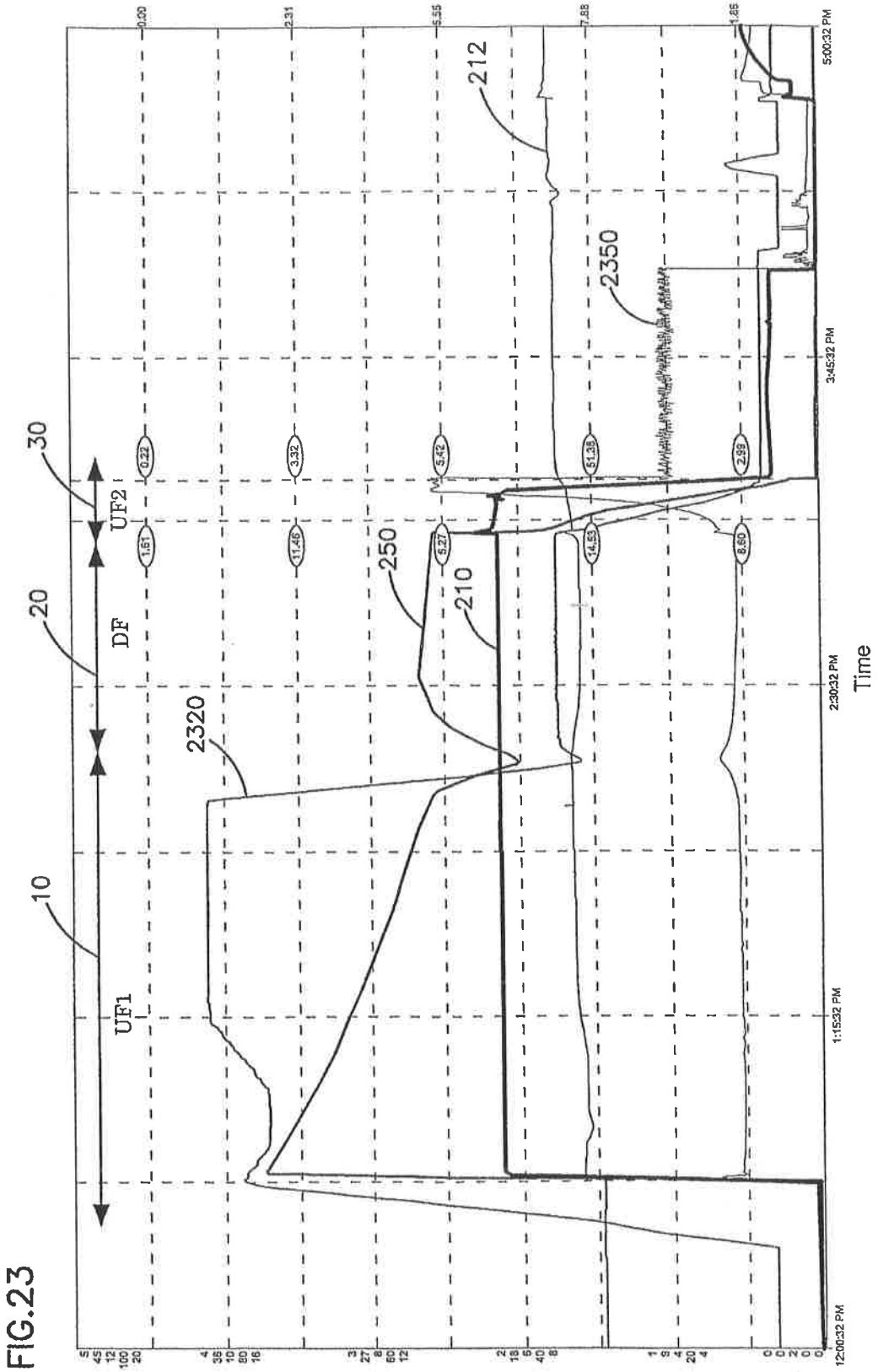

30
20
10
UF2
DF
UF1
212
2350
250
210
2320
Time
12:00:32 PM
1:15:32 PM
2:30:32 PM
3:45:32 PM
5:00:32 PM

FIG.23

FIG.24

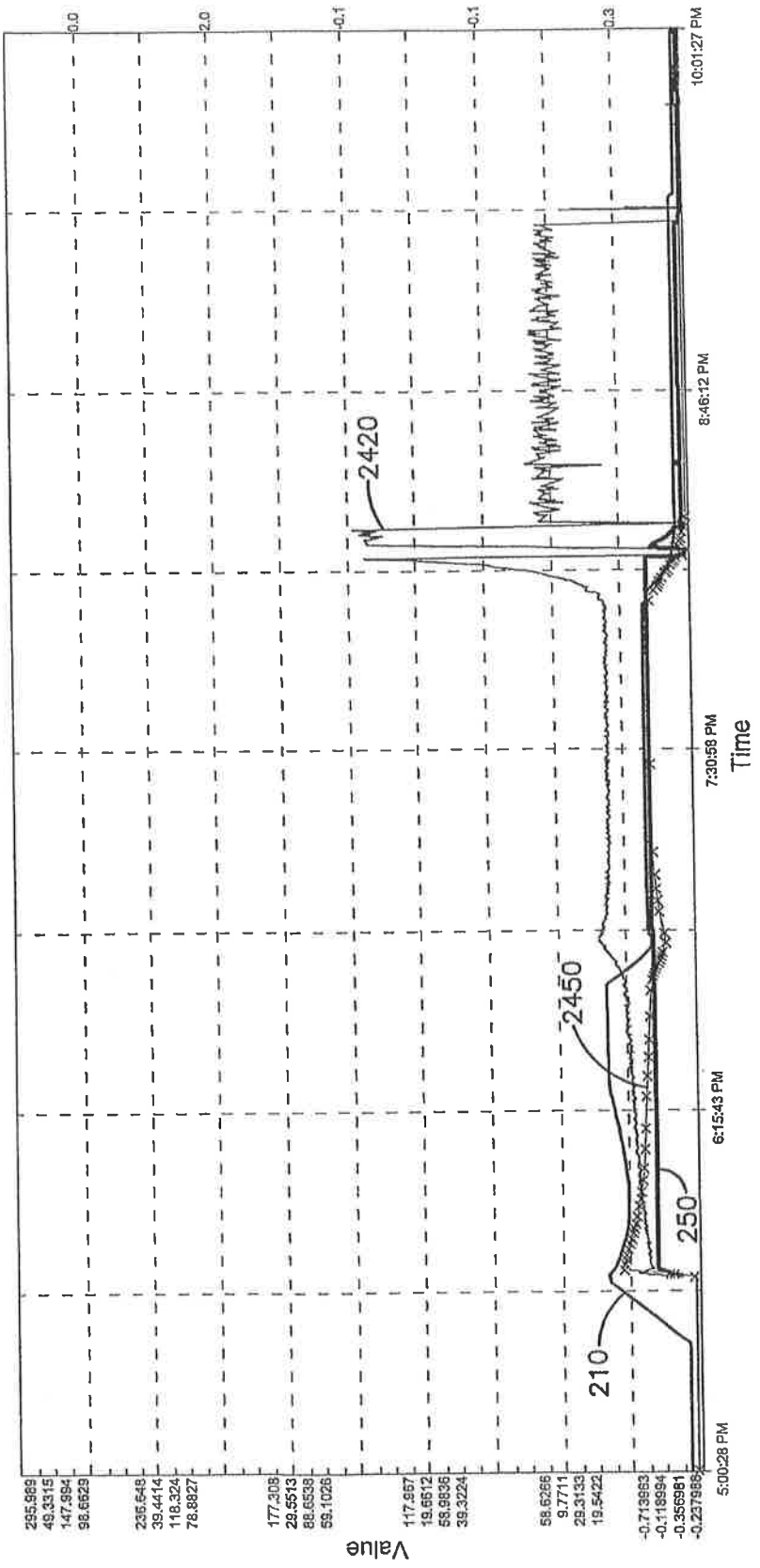
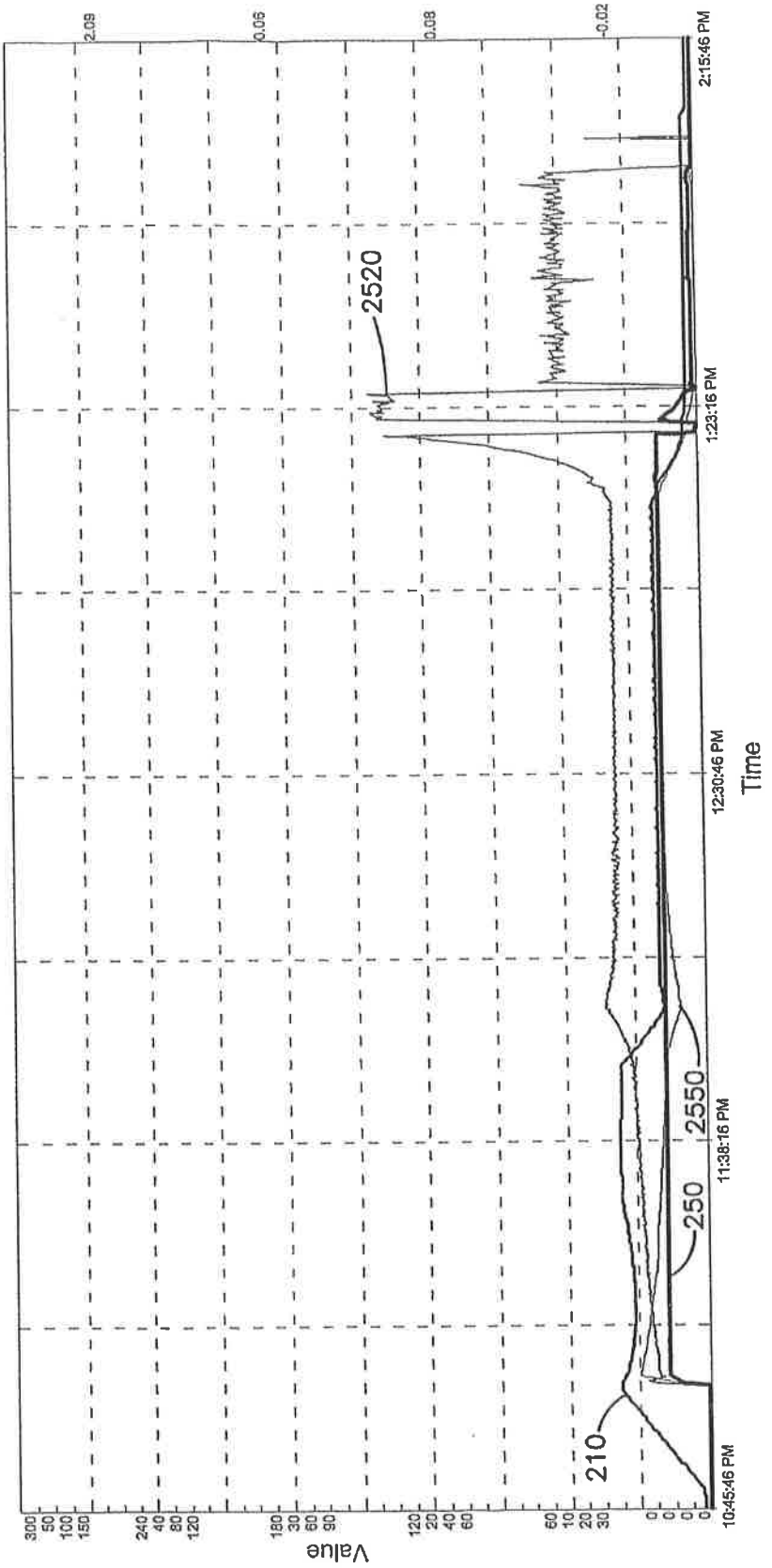

0.0
2.0
0.1
0.1
0.3
10:01:27 PM
8:46:12 PM
7:30:58 PM
6:15:43 PM
5:00:28 PM
Time
Value
255.989
49.3315
147.994
98.6629
235.648
39.4414
118.324
78.8827
177.308
29.5513
88.6538
59.1026
117.967
19.6612
58.9836
39.3224
58.6266
9.7711
29.3133
19.5422
-0.719963
-0.119994
-0.356981
-0.237988
2420
2450
250
210

FIG.25


2520
2550
250
210
Value
Time
10:45:46 PM
11:38:16 PM
12:30:46 PM
1:23:16 PM
2:15:46 PM