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Felix Chiang
In Situ Technical Resourcing
Operations Division
Alberta Energy Regulator
#1000, 250-5th St SW
Calgary, AB T2P 0R4

Via: felix.chiang@aer.ca

Subject: Annual N Pad Report

Imperial is pleased to submit the annual summary of volumes, wellbore integrity work, and performance of our water storage and recycling operations at N pad. This is the 12th annual report submitted since Approval No. 4510 for N pad was issued. This summary addresses the six main topics of interest expressed in the ERCB approval letter dated August 28, 2002, "**Approval No. 4510 (Water Disposal), Approval No. 8558 - Class II Water Storage Scheme - Application No. 1256579**". Additional commentary is provided as per the ERCB supplemental information request with respect to N pad operations dated May 2, 2012, "**Approval No. 4510, 2011 Annual N Pad Report Cold Lake Oil Sands Area**".

a) A summary of the monthly injection and production volumes for each well

Injection began into N pad on January 2001. Figure 1 summarizes the monthly water injection and production volumes from January 2001 to September 2015, along with the cumulative net injection over the same period. Figure 2 provides the average N pad reservoir pressure. The attached Tables 1, 2, and 3 provide detail on the monthly volume data for individual wells in 2011-2015.

In 2014 the total water injection volume was 389,800 m³ and the total water production volume was 0 m³. Throughout 2015, water injection continued until injection ceased in October 2015 as shown in Figure 1. A total of 201,400 m³ of water was injected in 2015 with 0 m³ of water production.

Given the highly connected Clearwater reservoir in this area of the field, water has continually been removed from N pad through leak off to adjacent pads. This occurrence can be illustrated in Figure 2 as N pad pressure materially dropped after injection ceased between Sept 2013 and April 2014. The strategy will be to continue operating adjacent pads to reproduce the water, but all operation at N Pad has ceased.

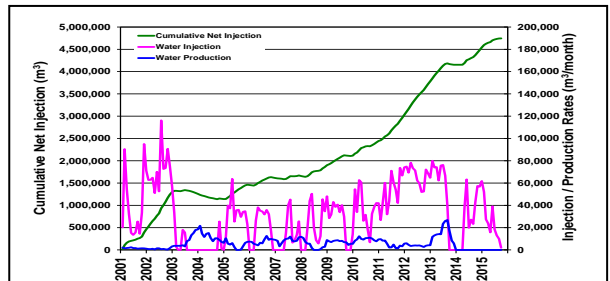


Figure 1: N Pad Injection and Production

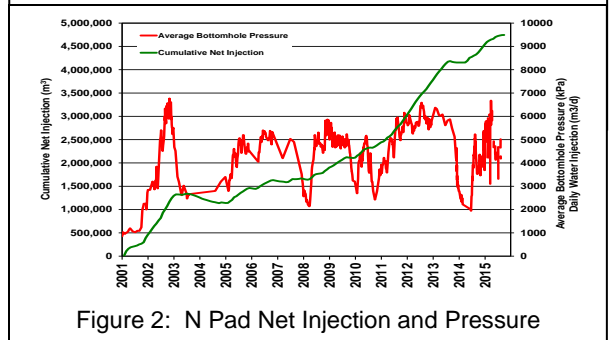


Figure 2: N Pad Net Injection and Pressure

b) A discussion of the wellbore and formation integrity, including the results of the pressure monitoring

Wells N-04, N-06, N-08, N-31, and N-43 are configured downhole to be used for water injection on N Pad. Wells N-06 and N-43 were used for injection in 2015; while N-04, N-08, and N-31 are currently suspended with a tubing set bridge plug. Annual packer isolation testing was completed on the two wells which were used for injection and results were submitted through the AER DDS system in Q3 2015. Both wells passed the pressure test. The suspended injector wells are pressure tested on a three year frequency, per Directive 013 requirements. N-08 was suspended in 2015 and passed a pressure test on the tubing plug and annular packer following the suspension job.

Wells N-05, N-14, N-15, N-24, N-30, N-36, N-37, N-38, N-39, and N-42 are used to monitor bottomhole pressures on N pad during times of injection. The bottomhole pressure for each well can be calculated from wellhead pressures and fluid level measurements. During periods of inactivity on N pad, the monitoring wells will be governed by Directive 013 suspension requirements for low risk wells. The wells will be maintained with a Nitrogen blanket in the tubing-casing annulus.

The original N pad approval stated that if the reservoir pressure increased to an average of 4500 kPa then all wells must be re-logged to ensure there is no migration of fluid out of the zone. In April 2005, a reservoir pressure of 4500 kPa was reached and all wells were re-logged. Based on the logging results, an application was made for waiver of further hydraulic isolation logging on the N pad injectors (results included below). In July 2005, this application was approved, with the requirement retained to log the injection wells if the reservoir pressure increased to 7500 kPa to ensure there is no migration of the stored fluid out of the zone. As seen in Figure 2, the average reservoir pressure has remained below 7500 kPa since the approval was granted. Based on prior interpretation of N pad logs (see attached), re-logging of N pad wells is not supported at this time. Wells would be re-logged if reservoir pressure exceeded 7500 kPa, as outlined in the July 2005 ERCB instructions.

c) an interpretation of remaining reservoir storage based on the injection and production for each well and pad

Cumulative net injection (water and bitumen) since January 1, 2001 is 4,771,900 m³. Cumulative water injection is at 5,827,500 m³. Production since start-up is 1,082,500 m³, with 26,800 m³ of that being bitumen production.

At the time of the N pad application, the storage potential was estimated at 1,500,000 m³ based on the recovery history of N pad and adjacent Leming pads and resulting bitumen voidage. In 2009, the estimated storage capacity was increased to 2,000,000 m³ based on cumulative net injection, reservoir pressure data, and limited evidence of water leakage to the surrounding operating pads. Continued net injection into N pad above this voidage has resulted in fluid leak-off to surrounding areas. The evidence of this leak-off is apparent in some wells on adjacent Leming and Mahkeses pads as increased water production.

Further evidence of this leak-off is apparent in the cumulative net injection and pressure trends. Although cumulative net injection continues to increase, average reservoir pressures have not risen substantially, indicating the voidage accessed by N pad injection is not closed, but open to other areas of the field.

Accordingly, it is believed that the 2,000,000 m³ is a reasonable estimate of N pad water storage capacity, but net injection volumes above that level are leaking off to other areas of the field.

d) a net water balance, bitumen production volumes and the incremental bitumen recovery for each well and pad

Since January 1, 2001, 5,827,500 m³ of water has been injected into N pad, and 1,055,600 m³ of water has been reproduced. Net water injection is therefore 4,771,900 m³.

As of January 2001, 28% of the effective original-bitumen-in-place (OBIP) at N pad had been recovered. A total of 26,800 m³ of bitumen has been produced since start-up of the N pad water storage/recycle operation. With this additional bitumen production, N pad recovery is now 29.7% of effective OBIP.

e) a discussion of the overall performance of the water storage scheme, including operating plans for the next year

Between late-2009 and mid-2013, N pad injection has been continuous as field produced water levels have increased. Injection ceased between September 2013 and March 2014 to allow for the repair of the surface injection pipeline. Injection resumed in April 2014 and has been continuous since. Throughout 2015, injection has declined (as seen in Figure 1) and in October 2015 has been discontinued.

As discussed in section (c) above, it is believed that cumulative net injection into N pad has exceeded the individual pad estimated storage capacity. This excess fluid is accessing interwell communication connections and is leaking off to other depleted areas within the Clearwater formation, including adjacent pads at Mahkeses and other Leming areas. Some wells have been impacted by higher water production, and will continue to pump in order to produce water out of the Clearwater. N pad water production, through adjacent pad wells, has been and will continue to be used as a water makeup source during early Nabiye field production, along with Nabiye produced water and brackish water supplies.

Historically a small volume of N pad production occurred concurrently with injection to maintain integrity of the surface production facilities for periods when increased water production is considered beneficial. Given the technical evidence that water injected into N pad is communicating with other adjacent wells, and to reduce the risk of a surface production pipeline failure, further production directly from N pad is not necessary at this time.

For the remainder of 2015 and beyond, N pad water injection will not be utilized. All excess site produced water will be directed to Nabiye as makeup water for steam generation eliminating the need for temporary storage. N pad water production through adjacent off pad wells will continue as an additional Nabiye water makeup source along with field produced water and brackish water supplies.

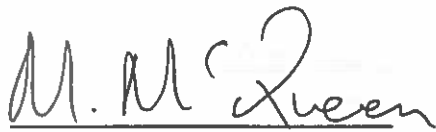
Operation of N-pad for temporary water storage at net cumulative injection volumes below the voidage volume was attractive because it allowed for continued bitumen production at attractive WOR's during periods with short term water constraints. However, as cumulative injection volumes increased and exceeded the voidage volume, it was increasingly evident that the Clearwater formation was more connected in this area of the field than originally anticipated and fluids were migrating to active production wells, increasing their WOR's. A key learning is that in zone disposal should be managed as a short term option only and net cumulative injection volumes need to be constrained to the voidage volume of the nominal disposal area.

f) and a discussion of the amount of stored produced water used and the associated fresh water reductions

Approximately 1,055,600 m³ of water has been reproduced from N pad since January 1, 2001. Historically, this water for the most part has replaced brackish water use, as that source of water is maximized prior to utilizing fresh water make-up. In recent years, higher field produced water has minimized the need for make-up water, brackish or fresh, and freshwater use has been reduced to the minimum levels required by the existing facilities.

Should you have any questions or concerns please contact me at (780) 639-5614.

Sincerely,

A handwritten signature in black ink, appearing to read "M. McQueen". The signature is fluid and cursive, with the first name "M." and last name "McQueen" clearly distinguishable.

M.D. (Matt) McQueen, P. Eng
Cold Lake Reservoir Surveillance Supervisor

cc. Colin Woods via email AER Bonnyville Field Centre

Table 1: N-Pad Water Injection (m3)

[illegible]

Table 2: Water Production (m3)

[illegible]

Table 3: Bitumen Production (m3)

[illegible]

Table 4: Historic Bottomhole Pressure Data (kPa)

	N-03	N-05	N-14	N-15	N-24	N-30	N-36	N-37	N-12/38	N-39	N-42	Average
8-Feb-01				971					739			855
21-Feb-01				1065		921	1229		633	1062	1271	1030
7-Mar-01				928		1029	1205		681	1048	1047	990
19-Mar-01				813		1026	1101		708	936	1141	954
2-Apr-01				1013		871	1264		739	995	1166	1008
16-Apr-01				960		1057	1019		961	1048	1047	1015
1-May-01				994		1029	1369		739	1048	1212	1065
14-May-01				1349		1082	1316		836	1048	1212	1140
28-May-01				1139		1239	1533		528	1384	1369	1199
4-Jul-01				1034		1000	1242		987	995	1099	1060
9-Aug-01				758		976	1302		905	1053	1166	1027
6-Sep-01				1034		1143	1229		961	1126	1061	1092
3-Oct-01				929		1057	1177		1044	1126	1166	1083
31-Oct-01				887		1174	1512		1620	1409	825	1238
13-Nov-01				1564		1945	2704		1561	2157	1907	1973
19-Nov-01				1370		2342	2257		1701	2320	2344	2056
26-Nov-01				1727		2394	2403		1760	2376	2120	2130
4-Dec-01				1286		2480	2803		1984	2465	2493	2252
3-Jan-02				1714		3225	2496		1941	2275	1887	2256
4-Jan-02				1545		2110	2428		2110	2531	2594	2220
7-Jan-02				1492		2110	2352		1552	2109	2400	2003
14-Jan-02				1617		2319	2723		1488	2465	2473	2181
21-Jan-02				1870		3049	3205		2007	3320	2896	2724
30-Jan-02				1905		3028	3529		2113	3417	3089	2847
28-Feb-02				2083		3060	3378		2321	3270	2955	2845
2-Apr-02				2307		3475	4011		2504	3550	3375	3204
22-Apr-02				2158		3033	3540		2638	3375	3231	2996
30-Apr-02				2053		3062	3435		2145	3304	3190	2865
7-May-02				2300		3270	3751		2743	3443	3255	3127
14-May-02				2477		3478	3851		2504	3700	3490	3250
22-May-02				2686		3342	3791		2666	3486	3372	3224
28-May-02				2659		3968	4879		2872	4708	3984	3845
3-Jun-02				2248		3187	3616		2557	3489	3162	3043
13-Jun-02				2300		3029	3247		2663	3164	3027	2905
19-Jun-02				2549		3396	3774		3049	3540	3370	3280
25-Jun-02				2769		3930	4247		3106	4056	3893	3667
15-Jul-02				3616		5343	5810		4343	5701	4969	4964
16-Jul-02				3456		5170	5780		4432	5780	5301	4987
23-Jul-02				3582		5137	5932		4604	5951	5464	5112
30-Jul-02				3863		5367	6296		4792	6371	5739	5405
8-Aug-02				3693		5064	5701		4400	5484	5066	4901
15-Aug-02				3793		4853	5433		4013	5359	4855	4718
19-Aug-02				3513		4686	5012		3611	5535	4717	4512
26-Aug-02				3898		4716	5300		4271	5497	4869	4759
4-Sep-02				3972		5240	5533		4485	5681	5085	4999
9-Sep-02				4183		5108	5715		4710	5530	5599	5141
16-Sep-02				4393		5849	6184		6050	6047	5698	5703
20-Sep-02				4567		5925	6495		6477	6454	6137	6009
21-Sep-02				4567		5112	6288		6425	6537	5972	5817
22-Sep-02				4567		5635	6366		6760	6537	6285	6025
23-Sep-02				4620		6476	6703		6760	6723	6728	6335
24-Sep-02				4147		5664	6755		6636	6537	6352	6015
25-Sep-02				4567		5826	6651		6320	6380	5750	5916
26-Sep-02				4567		5907	6599		6162	6411	5928	5929
27-Sep-02				4761		5961	6335		6162	6328	6086	5939
28-Sep-02				4708		5897	6282		6162	6328	6086	5910
29-Sep-02				4708		5897	6123		6109	6275	6086	5866
30-Sep-02				4643		5844	6123		6135	6223	6033	5834
1-Oct-02				4622		5792	6200		6135	6223	5975	5824
2-Oct-02				4612		5792	6200		6135	6223	5943	5817
3-Oct-02				4590		5760	6200		6082	6170	5922	5788
4-Oct-02				4708		5592	6123		5951	6202	5870	5741
5-Oct-02				4777		5592	6071		5951	6117	5875	5731
6-Oct-02				4672		5539	6071		5951	6064	5875	5695
7-Oct-02				4777		6067	6071		5977	6064	5752	5785
8-Oct-02				4777		5645	6253		6082	6170	6090	5836
9-Oct-02				4777		5717	6253		6082	6170	6090	5848
10-Oct-02				4883		5803	6411		6240	6328	6248	5985
11-Oct-02				4883		6055	6593		6398	6434	6353	6119
12-Oct-02				4935		6184	6593		6556	6518	6406	6199
13-Oct-02				4935		6237	6774		6661	6571	6459	6273
14-Oct-02				4988		6366	6926		6661	6960	6459	6393
15-Oct-02				5125		6418	7078		6950	6623	6568	6460
16-Oct-02				5072		6132	6540		6556	6602	6353	6209
17-Oct-02				5072		5950	6487		6503	6413	6358	6130
18-Oct-02				4951		5921	6892		6398	6445	6256	6144
19-Oct-02				4951		5844	6635		6267	6392	6147	6039
20-Oct-02				4951		5844	6506		6214	6287	6147	5991
21-Oct-02				4951		5792	6506		6162	6234	6095	5956
22-Oct-02				4951		6027	6716		6425	6392	6252	6127
23-Oct-02				5056		6055	6716		6530	6497	6358	6202
24-Oct-02				5125		6260	6769		6634	6497	6410	6283
25-Oct-02				5198		6237	6692		6634	6550	6463	6296
26-Oct-02				7066		6402	6769		6109	6602	6459	6568
27-Oct-02				5250		6290	6874		6582	6602	6459	6343
28-Oct-02				5440		6366	6874		6661	6824	6568	6455
29-Oct-02				5440		6498	6926		6792	6876	6676	6535
30-Oct-02				5440		6444	6926		6755	6876	6676	6520
31-Oct-02				5440		6397	6979		6844	6792	6620	6512
1-Nov-02				5440		6366	6874		6529	6602	6515	6388
4-Nov-02				5370		6132	6563		6293	6445	6410	6202
5-Nov-02				5370		6029	6563		6293	6392	6410	6176
6-Nov-02				5370		6184	6669		6398	6550	6515	6281
7-Nov-02				5423		6366	6774		6582	6655	6610	6402
8-Nov-02				5370		6313	6540		6556	6550	6515	6307

9-Nov-02	5356	6208	6487	6451	6445	6463	6235
10-Nov-02	5335	5974	6382	6267	6339	6305	6100
11-Nov-02	5335	5921	6276	6162	6181	6200	6013
12-Nov-02	5335	5869	6266	6151	6234	6189	6007
13-Nov-02	5147	5869	6224	6056	6181	6147	5937
14-Nov-02	5231	5764	6171	5972	6129	6095	5893
15-Nov-02	5231	5921	6276	6077	6266	6200	5995
16-Nov-02	5354	6027	6406	6293	6287	6294	6110
17-Nov-02	5354	6103	6485	6425	6339	6382	6181
18-Nov-02	5580	6182	6511	6346	6477	6456	6258
19-Nov-02	5685	6408	6669	6593	6602	6571	6421
20-Nov-02	5753	6551	6850	6739	6655	6676	6537
21-Nov-02		6660	6926	6739	6824	6676	6765
22-Nov-02	5601	6393	6821	6424	6634	6624	6416
23-Nov-02	5569	6055	6716	6398	6477	6466	6280
25-Nov-02	5475	6027	6611	6214	6372	6361	6177
26-Nov-02	5475	5921	6558	6162	6319	6309	6124
27-Nov-02	5475	6027	6611	6214	6372	6361	6177
28-Nov-02	5528	6027	6558	6162	6372	6309	6159
29-Nov-02	5407	5869	6735	6056	6149	6081	6049
2-Dec-02	5528	6155	6611	6346	6339	6466	6241
3-Dec-02	5528	6288	6716	6346	6424	6466	6295
4-Dec-02	5544	6288	6716	6346	6266	6571	6289
5-Dec-02	5475	6367	6769	6582	6666	6684	6424
6-Dec-02	5569	6393	6821	6634	6666	6684	6461
7-Dec-02	5648	6472	6821	6634	6582	6741	6483
8-Dec-02	5648	6524	6950	6766	6687	6627	6534
9-Dec-02	5648	6524	6950	6687	6771	6680	6543
10-Dec-02	5701	6576	7002	6818	6771	6732	6600
11-Dec-02	5685	6498	6926	6818	6855	6732	6586
12-Dec-02	5701	6576	6926	6713	6908	6732	6593
13-Dec-02	5717	6367	6716	6322	6698	6579	6400
16-Dec-02	5561	5921	6272	5823	6278	6155	6001
18-Dec-02	5508	5842	6114	5665	6036	6050	5869
20-Dec-02	5508	5868	6248	5903	6194	6207	5988
23-Dec-02	5334	5630	6037	5613	5412	5941	5661
27-Dec-02	5230	5117	5932	5560	5464	5783	5514
30-Dec-02	5717	5262	5721	5323	5254	5625	5484
3-Jan-03	4987	5080	5462	5113	5234	5520	5233
6-Jan-03	5125	5262	5721	5218	5603	5625	5426
13-Jan-03	5056	5420	5673	5536	5583	5783	5508
17-Jan-03	4952	5157	5433	5376	5096	5520	5256
27-Jan-03	4986	5157	5511	5222	1956	5243	4679
12-Feb-03		4370	4615	4431	4392	4785	4519
12-Mar-03		3316	3695	3278	3270	3498	3411
1-Apr-03		2932	3169		2936	3709	3187
1-May-03	2768			2629			2698
6-May-03			2799	2519	2531	2700	2637
9-May-03		2616					2616
5-Jun-03	2980	2878	3089	3087	3096		3026
15-Jul-03	2681						2681
22-Jul-03	2469						2469
30-Jul-03	2580						2580
6-Aug-03	2631						2631
11-Aug-03	2611						2611
20-Aug-03	2662						2662
12-Aug-04			2800				2800
29-Oct-04				3200			3200
29-Dec-04	3400						3400
11-Feb-05						2792	2792
16-Feb-05						2858	2858
22-Feb-05						3251	3251
28-Feb-05						3251	3251
8-Mar-05						3406	3406
15-Mar-05						3524	3524
24-Mar-05						3339	3339
30-Mar-05						3457	3457
5-Apr-05						3918	3918
11-Apr-05		4364	3734	4700		4234	4258
14-Apr-05		4095	4666	4320		4285	4342
18-Apr-05		3908	4740	4494		4322	4366
21-Apr-05		4012	4537	4494		4473	4379
25-Apr-05		4304	4726	4597		4610	4559
28-Apr-05		4343	4917	4786		4383	4607
2-May-05		4178	4517	4494	4311	4409	4382
6-May-05		4343	4457	4494		4322	4404
9-May-05		4239	4573	4545		4409	4442
12-May-05		4135	4333	4288			4252
16-May-05		4218	4472	4581			4424
24-May-05		4010	4067	4288			4122
2-Jun-05		3750	3837	3995		3945	3882
6-Jun-05		3678	3865	3789		3935	3817
14-Jun-05	3972	4083	4273	4350	4318	4224	4203
22-Jun-05	3939	4316	4531	4484	4469	4507	4374
29-Jun-05	4116	4745		5259	4994	5008	4824
5-Jul-05	4507	5013		5199	5224	5177	5024
13-Jul-05	5516	4843		5050	4998	4930	5067
20-Jul-05	4411	4678		4862	4875	4998	4765
26-Jul-05	4482	4909		5133	4959	4930	4883
27-Jul-05	4461	4959	5198	5058	5196	4961	4972
2-Aug-05	4424	4818	4987	4900	4746	4927	4800
9-Aug-05	4182	4345	4696	4480	4430		4427
17-Aug-05	4430	4827	5086	4956	4957		4851
24-Aug-05	4383	4678	5191	4851	5148		4850
1-Sep-05		5082	5320				5201
8-Sep-05	4655	5164	5556	5385	5215		5195
15-Sep-05	4496	4827	5268	4885	4813		4858

27-Sep-05			4441		4431	4955		4480	4516	4486	4552
5-Oct-05			4341		4239	4667		4350	4287	4499	4397
12-Oct-05			4312		4555			4536	4356	4173	4386
19-Oct-05			4395		4665	4778		4408	4356	4548	4525
25-Oct-05			4333		4853	5014		4758	4461	4619	4673
1-Nov-05			4514		4484	4906		4758	4374	4619	4609
8-Nov-05			4569		4640	5066		5008	4824	4918	4838
16-Nov-05			4450		4171	4826		4737	4479	4234	4483
22-Nov-05			4412		4478	4778		4632	4337	4484	4520
28-Mar-06			3800			4274		4138	4189	3844	4049
3-Apr-06			3974			4930		4414	4565	4433	4463
12-Apr-06			4240			4615		4473	4546	4330	4441
18-Apr-06			4436			4958		4803	4782	4584	4713
25-Apr-06			4716			5274		4960		4750	4925
3-May-06			4961			5586		5363	4896	4791	5119
10-May-06			4683			5194		4971	4896	4714	4892
17-May-06			4756			5218		5160	4896	5664	5139
24-May-06			4756			4588		5261	4896	5664	5033
1-Jun-06			4826					5710		5664	5400
6-Jun-06			4826			5270		5160		5664	5230
14-Jun-06			4826			5088		5646		5664	5306
21-Jun-06			4896			5088		5595	5636	5635	5370
27-Jun-06			4862			5088		5393	5636	5636	5323
7-Jul-06			4932			5088		5480	5636	5310	5289
12-Jul-06			4736			5693		5190	5005	5049	5135
18-Jul-06			4669			5384		5241	5024	5153	5094
10-Aug-06			4590			5173		5190	4938	4938	4966
30-Aug-06			4827			5483		5265	5136	4938	5130
7-Sep-06			4853			5743		5555	5514	5230	5379
13-Sep-06			4590			5483		5177	4967	4909	5025
27-Sep-06			4530			5117		4975	4637	4691	4790
6-Oct-06			4875			5693		5504	5346	5249	5333
27-Feb-07			4100		4600			3800	4200	4200	4200
12-Jun-07	5500	5300	4900		4700	5400		5000			5033
1-Aug-07						5100				4700	4900
16-Nov-07	3403		3630		3657			3519		3366	3515
23-Nov-07	4819		3436		3091			2108		2995	3290
30-Nov-07	2968		3212		3072			3250		3015	3103
7-Dec-07	2804		3207		2630			2665			2827
13-Dec-07	2633		2626		2303			2692			2564
21-Dec-07	2629		3401		2776			2528		2774	2822
30-Dec-07	2681		3383		2383			2775		2397	2724
9-Jan-08	2549		3258		2550			2235		2730	2665
18-Jan-08	2275		2961		2109			1717		2585	2329
25-Jan-08	2357		2427		2494			2413		2418	2422
11-Feb-08	2167		2216	2744	2151			1732		2252	2210
27-Feb-08	2193		2110		2169			2308		1908	2137
5-Mar-08	2115		2216		1736					2563	2158
12-Mar-08	2398				2432			2259		2624	2428
26-Mar-08	3180	3164	2869		3195			3176		3282	3144
3-Apr-08			2951		3641	4009	3897			3885	3677
7-Apr-08			3299		3922	3904	3792	4013		4023	3825
17-Apr-08			2721		4209	4431		4406		4375	4028
26-Apr-08			3358		4504	4041		4558		4248	4142
4-May-08			3548		4878			4748		4711	4471
8-May-08	4851	4010	3905		4746	4962	4740	4925	4957	4564	4629
9-May-08	4851	3988	3865		4791	4857	4635	4714	4852		4569
11-May-08	4956	4221	3917		5078	5145	4845	5005	5062		4779
15-May-08	5460	4466	4391		5338	5165	5665	5327	5511	5411	5202
19-May-08		4361			5338			5385		5301	5096
26-May-08		4657			5699			3654		5569	4895
3-Jun-08		4193	4395	4463	5156			5050		5020	4713
10-Jun-08		5062	4290		4897	4305	5428	4967	5157	5079	4903
19-Jun-08		4851	4579		5128			5112		5262	4986
24-Jun-08			4578		4973			4904		5033	4872
1-Jul-08			5023		5471			5386		5358	5310
3-Jul-08				5090			5533	5177	5072		5228
4-Jul-08								5267			5267
6-Jul-08		5062						5241			5151
7-Jul-08			4814		5156			5056		5066	5023
14-Jul-08			4710		4658	5071		4845		4750	4807
23-Jul-08	4797		4526		4851	5040		4925		4855	4832
28-Jul-08	5007		4736	4497	4926	5064		4795		4914	4849
5-Aug-08	4726	4851	4556		4791	4871	4876	4380	4665	4737	4689
18-Aug-08	4726		4556					4665		5205	4788
27-Aug-08	4588	5512	4348	4428	4218	4514	4826	4380	4455	4095	5121
4-Sep-08	4732		4220		4429			4108		4644	4426
18-Sep-08	4607		4458		4686	4880		4758		4938	4721
25-Sep-08	4641		4537			4924	4857	4635	4714	4641	4707
26-Sep-08	4641	4429	4537			4713	5012	4529	4714	4603	4680
28-Sep-08	4641		4432			4650	4590	4424	4504	4603	4549
30-Sep-08	5070	5066	4854	4793	5296	5222	5090	4845	5085	4287	4999
9-Oct-08	5845	5895	5391			5929	6130	5680	5698	5827	5825
16-Oct-08	5494	5748	5307			5776	5974	5094	5617		5589
19-Oct-08	5276	5247	4893			5458	5147	4706	5451		5178
22-Oct-08		5507	5036			5356		5218	5437		5529
28-Oct-08	5939	5663	5205				5963	5514	5608		5723
3-Nov-08	5853	5995	5412		5697	5978	6037	5950	5728		5863
6-Nov-08	5733	5546	5205		5405	5607		5758	6105		5633
10-Nov-08	5442	5546	4914	4406			5553	5349	5489	5228	5267
13-Nov-08	5821	5697	5288	5560			5758	5349	5575	5521	5609
17-Nov-08	5718	5884	5288	5844	5891		6351	5644	6005		5846
20-Nov-08	4726	5995	5578	5771	5806		5945	5629			5706
24-Nov-08	5821	5595	5205	6175	5516	5401	5538	5463	5440	5380	5629
27-Nov-08	5442	5382	5017	5228	5226	5568	5655	5133			5448
1-Dec-08	5265	5223	5036	5179	5268	5485	5423	5165	5193		5299
4-Dec-08	4965	5018	4220	5286	4772	5401	5607	4849	5165	4800	4995

8-Dec-08	5172	5365	4939	5610	5567	5466	5205		5251		5551	5347
11-Dec-08	4968	5161	4499	4862	5414	5568	5628		5338		5551	5221
15-Dec-08	5302	5059	4875	5662	4430	5540	5409	5170	5133		5139	5172
20-Dec-08		5552	4875	5649	5686	5690	5888	5576	5699		5913	5614
22-Dec-08	5843	6112	4791	5946	5686	5978	6264	5555	5511		5582	5727
29-Dec-08	5716	5520	4959	5639	5431	5319	5598	5482	5189	5175	5575	5418
31-Dec-08	5615	5802	4959	5717	5370	5690	5684	5281	5536		5493	5515
2-Jan-09	5112	5398	5162	5741	5363	5802	5364		5072		5656	5408
5-Jan-09	5390	5419		5076	5209	5280	4986		5043		5166	5196
8-Jan-09	5211	5063	4461	5076	5397	5177	5020		5682		5561	5183
13-Jan-09	4723	4960	4546	4869	4939	5177	5228	4885	4690		4885	4890
15-Jan-09	4655	4755	4255	4663	4836	4664	5101	4470	4586		4840	4683
19-Jan-09	5110	5136	4712	5013	5062	4908	5435	4831	4887		5126	5022
22-Jan-09	4903	5018	4795	5154	5021	4825	5124	4715	4707		5046	4931
26-Jan-09	4985	5018	4546	4655	4901	4991	5066	4806	5059		4965	4899
29-Jan-09	5236	4974	4832	5081	5106	5074	5389	4896	4887		5046	5052
2-Feb-09	5497	5161	4751	4515	5624	5196	5147	5261	4766		4819	5074
5-Feb-09	5358	5365	5202	4694	5294	5364	5677	5261	5265		5412	5289
9-Feb-09	5497	5068	4671	4869	5090	5074	4962	5261	5145		5046	5068
12-Feb-09	5582	5442	4981	5360	5158	5364	5470	5242	5145		5412	5316
16-Feb-09	5049	5051	4878	5689	4987	4972	5233	5013	4766		5207	5085
19-Feb-09	4740	4448	3804	4275	4491	4580	5211	4996	5025		5046	4662
23-Feb-09	4825	4942	4421	4725	5073	4888	5263	4787	4939		5046	4891
25-Feb-09	5236	5239	4626	4585	5534	4954	5425	5054	5317		5412	5138
27-Feb-09	5292	5405	4340	4725	5073	5159	5137	5031	4852		5046	5006
1-Mar-09	4911	4927	4011	4448	4971	4954	5116	4837	4836		4782	4779
4-Mar-09	5014	4928	4370	4590	4972	5043	5094	4837	5025		5126	4900
6-Mar-09	5205	5021	4340	4875	5115	4954	4888	4947	4939		4511	4880
8-Mar-09	4726	4882	4135	4209	4664	4927	5013	4947	4526		4921	4695
11-Mar-09	4911	4882	4587	4519	5330	4954	5218	4837	5111		4965	4931
13-Mar-09	4676	4985	3701	4445	5056	5043	5251	4971	5128		5105	4836
15-Mar-09	5172	4960	4382	4448	5636	5015	5116	5096	4939		5084	4985
18-Mar-09	4897	4843	4135	4308	4852	4749	5013	4787	4836		4840	4726
20-Mar-09	5102	4960	4075	4533	4868	5168	5116	4996	5128	4200	5024	4834
22-Mar-09	4882	4675	4216	4171	4840	5015	4975	5065	4819	5054	4839	4777
25-Mar-09	5377	4426	4156	4375	4433	5358	5572	5179	5214	5054	5452	4963
27-Mar-09	4825	4974	4135	4448	5126	5307	5349	5012	4905	5054	5452	4962
29-Mar-09	5377	5263	4340	4655	5248	5511	5469	4987	5763	5054	5452	5193
1-Apr-09	5000	4864	4011	4552	5044	5029	5264	4975	4922	5357	5063	4916
5-Apr-09	5205	5340	4299	4519	5330	5511	5264	5247	5317	5357	4941	5121
8-Apr-09	4897	5137	4094	4622	5228	4695	5367	5144	5111	5357	4839	4954
10-Apr-09	5259	5137	4382	4725	5279	5307	5469	5144	5197	5256	4950	5101
12-Apr-09	5259	5130	4638	4807	5397	5015	5264	5144	5197	5155	5046	5096
15-Apr-09	5394	5224	4352	5101	5397	5103	5349	5144	5370	5155	5273	5169
17-Apr-09	5394	5021	4434	4242	5194	5219	5144	5144	4992	5155	4854	4981
19-Apr-09	4726	4819	4318	4345	5397	4811	5349	5343	5078	5054	4725	4906
21-Apr-09	5404	5203	4612	4622	5318	5307	5424	5343	5181	5303	5273	5181
24-Apr-09	5313	4913	4612	4519	5397	5191	5424	5039	5078	5102	5159	5068
26-Apr-09	5201	4900	4510	4519	5013	4633	5220	5039	5078	4993	5046	4923
29-Apr-09	5394	4995	4700	4519	5307	5131	5424	5039	5078	4993	5229	5074
1-May-09	5089	4794	4191	4312	5103	4927	5015	4837	4668	4993	4926	4805
3-May-09	4885	4592	4292	4312	4900	4722	5015	4424	4770	4953	4725	4690
6-May-09	4885	4592	4292	4312	4798	4620	5015	4317	4668	4548	4725	4616
8-May-09	5089	4794	4700	4519	5103	4927	5220	4781	4873	4934	4926	4897
10-May-09	4885	4757	4580	4519	4900	4722	5424	4781	4842	4679	4926	4820
13-May-09	4885	4838	4580	4519	4900	4927	5220	4781	4842	4764	4926	4835
15-May-09	4987	4813	4784	4519	5002	4927	5220	4781	4873	4679	4926	4865
17-May-09	4885	4916	4580	4519	5002	4927	5220	4781	4873	4679	4926	4846
20-May-09	4987	4882	4522	4519	5103	4722	5220	4781	4873	4679	4839	4830
22-May-09	4885	5088	4522	4519	5103	5131	5220	4987	5078	4679	4839	4914
24-May-09	4885	5088	4522	4519	5103	5131	5424	4987	5078	4885	4839	4951
29-May-09	5144	5253	4522	4915	5397	5219	5424	5168	5251	4899	5420	5147
31-May-09	5329	5136	4522	4704	5397	5131	5424	5168	4960	4913	5335	5093
5-Jun-09	5115	4931	4318	4286	4459	4518	5220	4963	4960	4899	4635	4755
7-Jun-09	5128	4931	4522	4286	4664	4722	5220	4872	4960	5104	4635	4822
10-Jun-09	5329	5136	4522	4286	4664	4722	5424	5077	5165	5104	4839	4933
12-Jun-09	5144	4931	4434	4286	5013	5252	5511	5077	5078	5104	4993	4984
13-Jun-09	4934	4814	4229	4214	4844	4960	5117	4667	4770	4899	4859	4755
14-Jun-09	4892	4916	4383	4424	4766	4960	5220	4821	4822	4899	4909	4819
17-Jun-09	5144	5018	4434	4424	5079	4960	5220	4872	4873	4899	5164	4917
19-Jun-09	4942	4814	4434	4424	5079	5164	5424	4872	5078	4899	5164	4936
21-Jun-09	5144	4814	4434	4424	4975	5164	5220	4872	5078	4899	5173	4927
24-Jun-09	5144	4814	4434	4424	4975	5367	5424	5077	5284	4899	5173	5001
26-Jun-09	5035	4880	4229	4147	4921	4859	5307	4963	5165	4865	4757	4830
28-Jun-09	4724	4754	4229	4357	4792	4757	4898	4963	4960	4763	4843	4731
1-Jul-09	4724	4644	4229	4252	4611	4757	5102	4655	4857	4645	4757	4658
3-Jul-09	4910	4848	4229	4567	4714	4757	5102	4758	4960	4645	4960	4768
5-Jul-09	4806	4710	4229	4357	4714	4825	5102	4758	5165	4848	4773	4753
8-Jul-09	4910	4916	4434	4462	4714	5031	5307	5168	5165	5155	4875	4921
10-Jul-09	5276	5088	4229	4530	5231	5196	5496	5156	5165	5155	4875	5036
12-Jul-09	4862	4677	4148	4425	4818	4785	5190	4849	4960	4462	4843	4729
15-Jul-09	4747	4677	4229	4252	4818	4888	5190	4849	4960	4818	4599	4730
17-Jul-09	5069	4779	4331	4357	5024	5145	5190	4951	5011	4921	4959	4885
19-Jul-09	4862	4574	4178	4357	4818	4888	4986	4849	4960	4715	4599	4708
22-Jul-09	5069	4677	4331	4357	5024	5145	5394	5002	4960	4818	4805	4871
24-Jul-09	5257	4858	4102	4357	5205	5382	5220	5144	5251	4988	5251	5001
26-Jul-09	5153	4740	4496	4425	5128	5177	5394	4849	5046	5054	5207	4970
28-Jul-09	5153	4843	4526	4425	5231	5280	5394	5054	5251	5054	5171	5035
29-Jul-09	5360	5186	4736	4635	5334	5485	5598	5247	5405	5428	5171	5235
31-Jul-09	5257	5084	4631	4635	5334	5485	5496	5144	5251	5326	5119	5160
2-Aug-09	5050	4880	4526	4063	5128	5280	5394	5042	5251	5224	4965	4982
5-Aug-09	5153	4880	4526	4221	5128	5280	5292	5144	5149	5019	4862	4968
7-Aug-09	5050	4769	4500	4221	5128	4991	5394	5042	5149	5019	4760	4911
9-Aug-09	4843	4864	4500	4116	5102	4991	5292	4940	5046	4917	4635	4840
12-Aug-09	5050	4864	4500	4356	5102	5093	5292	4940	5200	5019	4870	4935
14-Aug-09	5153	5051	4421	4286	5257	4908	5000	4896	4873	5121	4921	4899
16-Aug-09	5236	5145	4211	4356	5102	5196	5292	5191	5149	5104	5063	5004
21-Aug-09	5133	5045	4290	4357	5102	5196	5394	4885	5251	5104	5166	4993

23-Aug-09	5162	5122	4185	4409	5102	5177	5292	4871	5149	5104	5063	4967
26-Aug-09	4906	4813	4500	4114	4978	4888	5088	4858	5031	4899	4839	4810
28-Aug-09	4903	4813	3871	4533	4875	5299	4884	4484	4929	4797	4737	4739
30-Aug-09	4903	4813	3871	4533	4875	5299	4884	4484	4929	4797	4737	4739
7-Sep-09	4616	4401	3819	4533	4670	4683	4680	3952	4929	4695	4430	4492
14-Sep-09	4513	4093	3505	4323	4464	4477	4578	4056	4929	4678	4328	4359
21-Sep-09	4409	3990	3505	4219	4361	4477	4578	4056	4622	4372	4022	4237
28-Sep-09	3900	3990	3401	3582	3783	3788	4374	3861	3908	3771	3920	3843
29-Jul-09	5360	5186	4736	4635	5334	5485	5598	5247	5405	5428	5171	5235
31-Jul-09	5257	5084	4631	4635	5334	5485	5496	5144	5251	5326	5119	5160
2-Aug-09	5050	4880	4526	4063	5128	5280	5394	5042	5251	5224	4965	4982
5-Aug-09	5153	4880	4526	4221	5128	5280	5292	5144	5149	5019	4862	4968
7-Aug-09	5050	4769	4500	4221	5128	4991	5394	5042	5149	5019	4760	4911
9-Aug-09	4843	4864	4500	4116	5102	4991	5292	4940	5046	4917	4635	4840
12-Aug-09	5050	4957	4500	4356	5102	5093	5292	4940	5200	5019	4870	4944
14-Aug-09	5153	5051	4421	4286	5257	4908	5000	4896	4873	5121	4921	4899
16-Aug-09	5236	5145	4211	4356	5102	5196	5292	5191	5149	5104	5063	5004
21-Aug-09	5133	5045	4290	4357	5102	5196	5394	4885	5251	5104	5166	4993
23-Aug-09	5162	5122	4185	4409	5102	5177	5292	4871	5149	5104	5063	4967
26-Aug-09	4906	4813	4500	4114	4978	4888	5088	4858	5031	4899	4839	4810
28-Aug-09	4903	4813	3871	4533	4875	5299	4884	4484	4929	4797	4737	4739
30-Aug-09	4903	4813	3871	4533	4875	5299	4884	4484	4929	4797	4737	4739
7-Sep-09	4616	4401	3819	4533	4670	4683	4680	3952	4622	4695	4430	4464
14-Sep-09	4513	4093	3505	4323	4464	4477	4578	3965	3908	4678	4328	4257
21-Sep-09	4409	3990	3505	4219	4361	4477	4578	4056	3821	4372	4022	4164
28-Sep-09	3900	3990	3401	3582	3783	3788	4374	3861	3630	3771	3920	3818
5-Oct-09	3432	3681	3111	3582	3627	3623	4374	3667	3448	3771	3818	3649
13-Oct-09	3059	3475	3111	3377	3524	3543	3865	3460		3600	3818	3483
19-Oct-09	2703	3372	2822	3166	3420	3336	3285			3586	3466	3239
16-Nov-09		2971	2679	2834	4189	3206					3377	3209
17-Dec-09	2677	2513	2286	2390	3709	2743	2915	2400	2565		2744	2694
30-Dec-09	3482	3461	2491	2963	3442	3568	3650	3639	3399	3614	2744	3314
5-Jan-10	4494	3977	2491	3551	4015	3964	4249	4400	4242	4163	3991	3958
12-Jan-10	4695	4252	3723	2818	4223	4165			4201	4332	4234	4071
20-Jan-10	4393	4563	3475	3032	4223	3981		4400	4227	4163	4130	4059
26-Jan-10	4788	4471	3723	3747	4482	4266	4563	4880	4637	4519	4412	4408
1-Feb-10	4686	4448	3773	3643	4811	4165	4662	4880	4507	4500	4276	4396
11-Feb-10	4048	3939	3672	3166	4260	3991	4294	4214	4203	4293	4101	4016
18-Feb-10	4011	3837	3427	3588	4057	4000	4193	4121	4013	3102	3799	3832
24-Feb-10	4688	4509	3723	3588	4444	4284	4472	4199	4368	3849	3871	4181
2-Mar-10	4337	4211	3773	3377	4057	4092	4282	4105	4279	4194	4291	4091
13-Mar-10	4882	4984	3970	3588	4728	4752	5116	4988	4849	4750	4782	4672
16-Mar-10	4788	4777	3920	3588	4678	4747	4726	4594	4659	4741	4406	4511
24-Mar-10		4220	4117	3588		5050	5293	5373	5227	5228	5041	4793
1-Apr-10	5276	4225	3799	3937	5078	5050	5382	5181	5227	5228	5128	4864
5-Apr-10	5250	5067	4011	3937	5041	5050	5515	5182	5251	5344	3483	4830
15-Apr-10	5377	5323	4465	4147	5041	5230	5300	5343	5338	5333	5397	5118
22-Apr-10	5361	5380	4648	4252	5269	5339	5610	5366	5338		5164	5173
27-Apr-10	5292	5248	4494	4042	5167	5339	5349	5165	5373		5139	5061
30-Apr-10	5117	5378	4537		4957	5364		4857	4875	5535	5091	5079
6-May-10	4804	5062	4221	4042	4957	4853	4992	4752	4746	4870	5052	4759
12-May-10	4908	4851	4221	4252	4218	4502	4751	4752	5061	5182	5017	4701
19-May-10	4219	4201	3588	4042	3796	4713	4380	4176	4536	4241	4190	4189
27-May-10	3586	3691	3271	3271	3586	4080	3853	3329	3792	3880	3874	3656
3-Jun-10	3376	3699	3166	3232	4054	3482	3881	3434	3581	3861	3558	3575
9-Jun-10	3984	4375	3377	3377	4471	3376	4409	3985	4035	4325	4073	3981
17-Jun-10	4517	4602	3482	3513	5415	4153	4790	4455	4612	4703	4422	4424
22-Jun-10	4307	4394	3377	3795	3691	4382	4583	4264	4403	4495	4422	4192
30-Jun-10	3659	3279	3166	3166	3269	4382	3857	3414	4194	3681	3640	3610
7-Jul-10	3238	3069	2743	2744	3480	3376	3235	3204	3195	3656	3221	3196
15-Jul-10	3375	3279	3166	2955	2953	2954	3442	3160	2858	3630	3431	3200
22-Jul-10	2953	3203	2743	2533	2742	3376	2532	2574	2985	3825	3011	2952
27-Jul-10	2742	3022	2638	2638	2426	2743	3028	2641	2739	3140	2906	2787
20-Aug-10	2320	2320	2321	2216	2844		2571	2326	2317	2563	2460	2426
17-Sep-10	2902	2859	2321				2571	2849	2528	3140	3043	2777
15-Oct-10	3404	3488	2902		3394	3149		3405	3484	3545	3508	3364
19-Oct-10	3759	3827	3032	2849	3730	3310	3612	3498	3826	3961	3784	3563
25-Oct-10	4115	3977	3111	2638	4171	3599	4173	3878	3307	4112	3992	3734
1-Nov-10	3551	3514	2902	2849	3521	3310	3781	3489	3211	4484	3505	3465
8-Nov-10	3759	3540	3352	2744	3807	3334	3799	3489	3673	3925	3854	3571
16-Nov-10	3937	3827	3352	2744	4016	3439						3552
18-Nov-10							3968	3767	3826	4104	3997	3932
22-Nov-10	3624	3618	3352	2816	3807	3149	3950	3767	3569	4104	3589	3577
30-Nov-10	3788	4131	3561	2884	4249	3679	4155	4063	4120	4204	3856	3881
7-Dec-10	4189	4131	3352	2884	4249	3841	4155	4155	4206	4104	3856	3920
14-Dec-10	3981	4235	3561	2673	4249	3841	4509	4155	4414	4499	3943	4005
22-Dec-10	4398	4339	3561	3173	4457	4049	4614	4358	4414	4606	4493	4224
29-Dec-10	4085	4131	3352	3247	4249	3945	4509	4256	4250	4054	4071	4013
4-Jan-11	4132	4235	3143	3247	4249	4130	4509	4256	4288	4204	4071	4042
11-Jan-11	4132	4339	3062	3352	4353	4130	4614	4155	4494	4204	4218	4096
19-Jan-11	3924	3769	3247	3352	3885	3656	4090	3767	3717	4104	3914	3766
25-Jan-11	3820	3561	4011	3457	3676	3551	4090	3767	3614	4112	3812	3770
1-Feb-11	3281	3561	4331	3457	3390	3285	3881	3285	3496	3825	3624	3583
8-Feb-11	3745	3897	4538	2744	3859	3632	4090	3767	4022	4154	3914	3851
21-Feb-11	4823	4575	4622	2744	4379	4338	4955	4745	4607	4746	4594	4466
7-Mar-11	5068	5169	4622	2892	5076	4822	5482	5223	5072	5196		4862
21-Mar-11	5255	5169	4432	4182	5102	5111	5459	5324	5231	5366	5259	5081
7-Apr-11	5130	5045	4432	4010	5050	5318	5562	5315	5130	5072	5262	5030
21-Apr-11	4978	4838	3799	4221	5050	5214	5147	4912	4760	4776	4904	4782
24-Apr-11	4851	4956	4528	4253	4957	4748	5274	4845	4845	4641	4904	4800
7-May-11	4000	4218	4821	4358	4218	4009	4223	4108	4108	4219	4238	4229
21-May-11	5013	5079	5019	4569	5175	5271	4879	5258	5608	5241	5102	5110
28-May-11	5190	5227			5205	5697		5258	5451		5798	5404
7-Jun-11	5587	5559	4525	4221	5695	5170	6077	5644	5875	5576	5662	5417
11-Jun-11	5801	5905			5962		5989				5875	5907
21-Jun-11	6059	5869	4326	3693	6011	5275	6066	5737	5875	5910	5989	5528
26-Jun-11	5906	5905			6054							5955
7-Jul-11	5906	5905	5019	4007	5579	5795	6248	5737	6085	5910	5989	5653

18-Jul-11	5898		4525	4289	5204	5872	5739	5444		5535	5722	5359
26-Jul-11			4326	4433	5397	4853	5632	5251		5157	5722	5096
6-Aug-11		5273			5453	3058			5594			4969
9-Aug-11		5301	4676	4506	5471	5451	5469	5345	5489	5325	5731	5276
12-Aug-11		5484	4643		5338	5135		5372				5194
15-Aug-11		5512	4655	4184		5281	5553	5348		5535	5682	5219
23-Aug-11		5512	4841	4078	5535	5509	5538	5431		5618	5949	5335
30-Aug-11		5590	4736	4078	5848	5509	5795	5431		5660	5739	5376
6-Sep-11		5905	5051	4289	5744	5509	5898	5746		5951	5989	5565
13-Sep-11		5695	5076	4289	5744	5795	5279	5304		5273	5358	5313
20-Sep-11	5800	4550	4289	6312	5690	5884	5619		5886	6046	5564	
27-Sep-11	5856	5207	4499	6237	5795	6506	6099		6161	6151	5835	
28-Sep-11						5875					6438	6157
4-Oct-11	5856	5417	5065	6237	5776	6506	6204		6266	6333	5962	6333
11-Oct-11	5884	5417	5065	6237	5807	6353	6204		6331	6333	5959	6333
18-Oct-11	5884	5417	5065	6342	5702	6142	6204		6331	6333	5936	6333
25-Oct-11	5674	5207	4854	6028	5565	6009	5994		6121	6122	5730	6122
1-Nov-11	5568	5076	4854	6104	5460	6086	5889		6414	5969	5713	6414
8-Nov-11	5568	5285	4749	6104	5565	6163	5889		6100	6028	5717	6100
15-Nov-11	5357	5076	4643	5895	5537	6211	5785		5974	5980	5607	5974
22-Nov-11	5568	5076	4643	5906	5432	6107	5954		6079	6086	5650	6079
29-Nov-11	5484	5076	4749	6011	5537	6211	5954		6079	5980	5676	6079
5-Dec-11						6229		5898			6064	6229
3-Jan-12	5435	4710	5866		5614	6086	5597	6005	6057	5875	5694	6005
10-Jan-12	5645	4550	4643	5800	5719	6086	5702	6085	6141	6200	5657	6086
17-Jan-12	5485	4361	4538	5273	5222	5490	5387	5690	5660	6182	5329	5490
24-Jan-12	5065	4854	4327	5273	5040	5690	5261	5665	5618	5731	5252	5690
31-Jan-12	5485	5065	4643	5589	4439	5898	5575	5980	5827	6159	5466	5898
9-Feb-12	5380	4854	4432	5378	5176	5932	5387	5850	5590	5836	5381	5932
14-Feb-12	5538	4959	4643	5664	5432	6142	5492	5955	5906	6151	5588	6142
21-Feb-12	5403	4959	4538	5423	5327	6086	5431	5850	5866	5997	5488	6086
28-Feb-12	5091	5065	4780	5484	5207	6239	5138	6165	5866	6312	5535	6239
6-Mar-12	6222	4959	4674	5709	5327	6239	5622	6165	6328	6102	5735	6239
13-Mar-12	6222	5065	4674	5681	5327	6239	5793	6165	6117	6207	5749	6239
20-Mar-12	6382	5065	4920	5653	5509	6123	5688	5955	6223	6191	5773	6123
27-Mar-12	6116	5065	4920	5653	5509	6344	5688	6165	6223	5742	5742	6344
3-Apr-12	6116	4959	4762	5804	5480	6344	5688	6165	6223	6191	5773	6165
10-Apr-12	5905	4643	4709	5594	4935	6239	5641	6060	6117	6016	5586	6239
17-Apr-12		4854	4749	5699	5355	6058	5470	6060	6012	6086	5594	6060
24-Apr-12	6095	5065	4749	5699	5250	6239	5726	6269	6223	6143	5746	6239
1-May-12	6586	5019	4849	6538	6261	6757	5986	6269	6750	6248	6126	6757
8-May-12	6660	5576	5235	6708	6406	6909	6544	6772	6855	6846	6451	6909
15-May-12	6807	5654	5235	6656	6301	6698	6777	6824	6750	6846	6455	6777
22-May-12	6957	5836	5204	6807	6558	7031	6763	6824	7043	6856	6588	7031
29-May-12	6509	5836	5204	6598	6529	7031	6454	6697	6729	6961	6455	7031
5-Jun-12	6644	5626	5309	6598	6319	6792	6109	6697	6833	6636	6356	6792
12-Jun-12	6697	5521	5272	6702	7367	6869	6109	6609	6916	6583	6365	6869
19-Jun-12	6487	5521	5272	6702	6214	6764	6109	6609	6916	6531	6313	6764
26-Jun-12	6382	5521	5167	6493	6109	6735	6085	6372	6707	6426	6200	6735
3-Jul-12	6066	6014	4853	6178	5795	6316	5559	5951	6288	6007	5903	6316
10-Jul-12	6142	5276	5059	6311	5565	6526	5957	6267	6707	6426	6024	6526
17-Jul-12	6220	5253	4849	6117	5767	6184	5514	6056	6371	6065	5840	6184
25-Jul-12	6360	5276	4849	6283	5977	5912	5869	6267	6685		5942	5912
31-Jul-12	5062	5170	4815	6073	5719	6239	5517	6056	6141	6046	5684	6239
7-Aug-12	6116	5170	4849	6044	5719	6316	5603	6162	6246	6203	5843	6316
14-Aug-12	6095		4849	6149	5719	6211		6241	6036	6207	5938	6211
21-Aug-12	5775		4538	6267	5432	6030		6004	5801	5827	5709	6030
28-Aug-12	5590	4854	4538	6058	5432	5715	5453	5556	5484	5625	5431	5715
4-Sep-12	6327	5170	4780	6073	5795	6261	5807	6215	6328	6159	5891	6261
18-Sep-12	5590	4959	4498	6066	5509	5974	5492	5585	5708	5836	5522	5974
25-Sep-12	5957	5065	4709	6297	5795	6184	5688	6005	5866	6007	5757	6184
2-Oct-12	5970	4831	4569	6267	5480	6156	5477	5770	5971	5699	5619	6156
9-Oct-12	6151	5147	4569	6312	5690	6234	5942	5980	6076	6016	5812	6234
27-Nov-12	6640	6225	5201	6643	6027	6716	6636	6714	6288	6627	6372	6716
18-Dec-12	6749	5863	4991	6538	6236	6735	6531	6583	6432	6522	6318	6735
18-Jan-13	6327	5261	4833	6538	5923	6521	6130	6214	6119	6522	6039	6521
12-Feb-13	6538	5803	4993	6493	5974	6229	5848	6198	5990	6159	6023	6229
6-Mar-13	6433	5258	4920	6644	6225	6393	5695	6214	6622	6426	6083	6393
15-Apr-13	5695	5065	4643	5953	5562	5807	5590	5846	6060	5932	5615	5807
15-May-13	5779	5307	4709	6388	5872	6123	5899	6085	5801	6256	5822	6123
18-Jun-13	5568	5390	5059	6493	5974	6344	5671	6198	5775	6264	5874	6344
16-Jul-13	5435	5076	4604	5968	5478	5712	5464	5698	5735	5731	5490	5712
20-Aug-13	4986	4748	4184	5310	5194	5588	5237	5241	5062	5692	5122	5588
18-Sep-13	4640	3799	3482	5062	3904	4223	4003	4108	4324	4222	4174	4223

19-Sep-13	3640											3640
22-Sep-13	3902											3902
23-Sep-13	3269											3269
24-Sep-13	3164	3271	3113	3586	3323	3590	3405	4055	3586	3483		3458
25-Sep-13							3067					3067
26-Sep-13	3164											3164
1-Oct-13	2953	3060	2902	3375	3165	3273	2990	4003	3270	3166		3216
3-Oct-13	3269		2955		3165		3160			3453		3200
4-Oct-13	3269		2955	2109	2954		3115			3272		2946
6-Oct-13	3269		2849		2532		3084			3166		2980
8-Oct-13		2849				3167		3055	3164			3059
10-Oct-13	3058		2744		2743		2886			3061		2898
13-Oct-13							2897					2897
15-Oct-13		2743		2953		2956	2844	2791				2857
16-Oct-13								2791				2791
19-Oct-13								2791				2791
22-Oct-13	2900	2691	2638	2900	2743	2956	2739	2791	2848	2850		2806
29-Oct-13	2778	2638	2533	2742	2638	2745	2739	2739	2742	2744		2704
5-Nov-13	2707	2480	2480	2636	2532	2587	2528	2528	2531	2744		2575
12-Nov-13			2110	2322	2531				2475	2517	2586	2454
18-Nov-13			2110	2322	2531		2692		2528	2531		2452
19-Nov-13											2639	2639
26-Nov-13		1899	2216	2426		2428		2317	2479	2489		2322
3-Dec-13			2216	2426		2217		3265	2581	2278		2497
10-Dec-13		1836	2111	2320		2483		2317	2161	2322		2221
1-Apr-14										2006		2006
3-Apr-14				1870		2149		1823				1947
10-Apr-14				2426		2801		2412		2621		2565
15-Apr-14				2640		2763		2482		2581		2617
17-Apr-14				2640		3103		2832		3004		2895
22-Apr-14						3564		3216		3476		3419
24-Apr-14				3249								3249
25-Apr-14				3436		3771		3319		3750		3569
28-Apr-14				3855		3842		3631		3993		3830
1-May-14				3947		4430		3311		4019		3926
6-May-14				3896		3972		3506		3756		3783
9-May-14				4294		4356		4256		4394		4325
10-May-14				4373		4429		4248		4327		4344
12-May-14				4321		4409		4229		4275		4309
16-May-14				4477		4409		4281		4498		4416
18-May-14									4531			4531
19-May-14									4710			4710
20-May-14			4477			4709		4382		4446		4504
21-May-14									4606			4606
22-May-14				4294		4638				4615		4516
23-May-14								4418				4418
25-May-14									4888			4888
26-May-14	5376				4906		4871					5051
28-May-14	5272			4815	5126	4856	4871	5055		5028		5003
29-May-14	5376			5179	5126	5240	5078	5158		5464		5232
2-Jun-14	5065			2800	2638	4832	4663	4848		4758		4229
3-Jun-14				4972		5043		4848		4862		4931
5-Jun-14				4765		4836		4642		4654		4724
12-Jun-14				4348		4013		4159		4394		4229
15-Jun-14									4115			4115
17-Jun-14				4037		3815		4004		3996		3963
19-Jun-14				4037		3763		3900		3892		3898
23-Jun-14	4028				3555		3677					3753
24-Jun-14				3750		3607		3625		3580		3641
26-Jun-14				3619		3462		3487		3563		3533
1-Jul-14				3647		3451		3511		3476		3521
3-Jul-14				3671		3494		3625		3476		3567
8-Jul-14				3829		3548		3607		3733		3679
10-Jul-14				3829		3652		3607		3629		3679
13-Jul-14									3823			3823
21-Jul-14	3821											3821
22-Jul-14				4192		3596		3970		3629		3847
30-Jul-14				4115		4238		3986		4239		4145
1-Aug-14				4219		4497		4262		4470		4362
5-Aug-14				4194		4282		3956		4263		4174
7-Aug-14				3829		3940		3954		3952		3919
8-Aug-14						4201		4110				4156
10-Aug-14						2068		4058	4266			3464
12-Aug-14				3829		4045		3851	4323	4055		4021
13-Aug-14									4011			4011
14-Aug-14				3879		4045		3954		4055		3983
15-Aug-14									4101			4101
19-Aug-14				4037		4149		3954		4055		4049
21-Aug-14				3908		4023		3936		4118		3996
26-Aug-14				3804		4023		3936		3548		3828
27-Aug-14									3984			3984
28-Aug-14				4194		4231		4144		3902		4118

[illegible]

28-Dec-14					5852					5852
29-Dec-14	6328	5689	4774	5540		6125		6105	6056	5802
30-Dec-14					5852					5852
31-Dec-14										
01-Jan-15										
02-Jan-15				6395		5792	6162		6082	6108
03-Jan-15					5644		6006			5825
04-Jan-15				7195		6251		6575		6674
05-Jan-15				6267		6237	6162	5928	6189	6157
06-Jan-15										
07-Jan-15	6351	5637	4774		5800					5641
08-Jan-15				6163		6031		6349	6209	6188
09-Jan-15							6006			6006
10-Jan-15										
11-Jan-15										
12-Jan-15	6351	5585	4671	6163	5748	6031	6006	5832	6116	5834
13-Jan-15										
14-Jan-15										
15-Jan-15										
16-Jan-15				6163		6074		5795	6127	6040
17-Jan-15										
18-Jan-15								6239		6239
19-Jan-15	6168	5426	4410	6267	5981	6022	5821	5928	6396	5824
20-Jan-15										
21-Jan-15										
22-Jan-15				6007		5904		5577	4653	5535
23-Jan-15										
24-Jan-15										
25-Jan-15										
26-Jan-15	5625	5171	4152	5540	5567	5592	5198	5474	5433	5306
27-Jan-15										
28-Jan-15										
29-Jan-15				5333		5606		5422	5951	5578
30-Jan-15										
31-Jan-15										
01-Feb-15										
02-Feb-15	5522	4756	4258	5333	5022	5502	5239	5266	5017	5102
03-Feb-15										
04-Feb-15										
05-Feb-15						5143		5370	5109	5207
06-Feb-15										
07-Feb-15										
08-Feb-15										
09-Feb-15			4361		4815		4825			4667
10-Feb-15				5125		4838		4955	4798	4929
11-Feb-15										
12-Feb-15				4554		4989		5059	5005	4902
13-Feb-15										
14-Feb-15										
15-Feb-15										
16-Feb-15				5125		5145		4903	4913	5022
17-Feb-15										
18-Feb-15										
19-Feb-15				5021		5051		5022	5039	5033
20-Feb-15										
21-Feb-15										
22-Feb-15										
23-Feb-15										
24-Feb-15				4710		4783		4918	4843	4814
25-Feb-15										
26-Feb-15										
27-Feb-15										
28-Feb-15										
01-Mar-15										
02-Mar-15	4856	4181	4000		4400		4600			4407
03-Mar-15				4762		4679		4711	4739	4723
04-Mar-15										
05-Mar-15				4606		4219		4608		4478
06-Mar-15										
07-Mar-15										
08-Mar-15										
09-Mar-15	4701	3973	3750		4349		3900			4135
10-Mar-15				4502		4366		4522	4429	4455
11-Mar-15				4346		4262		4418	4325	4338
12-Mar-15				4191		4054		4126	4263	4159
13-Mar-15										
14-Mar-15										
15-Mar-15										
16-Mar-15	4319	2728	3595	4087	3867	3950	3978	3954	4118	3844
17-Mar-15										
18-Mar-15										
19-Mar-15				4813		4679		3954	3798	4311

20-Mar-15										
21-Mar-15										
22-Mar-15										
23-Mar-15	4215	3766	3698	4087	3867	4054	3978	3954	3746	3929
24-Mar-15										
25-Mar-15										
26-Mar-15				4191		4054		3851	3746	3961
27-Mar-15										
28-Mar-15										
29-Mar-15										
30-Mar-15				4269		4168		4126	4118	4170
31-Mar-15	5404	3846			3763		3978			4248
01-Apr-15										
02-Apr-15				4217		4116		4022	3911	4067
03-Apr-15										
04-Apr-15										
05-Apr-15										
06-Apr-15										
07-Apr-15	3738	3662	3333	4062	3711	4064	3668	3866	3756	3762
08-Apr-15										
09-Apr-15				3958		3908		3711	3704	3820
10-Apr-15										
11-Apr-15										
12-Apr-15										
13-Apr-15				3802		3752		3607	7582	4686
14-Apr-15	3694	3350	2909							3318
15-Apr-15										
16-Apr-15				3854		3908		3659	3601	3756
17-Apr-15										
18-Apr-15										
19-Apr-15										
20-Apr-15	3798	3454	3272	3802	3555	3856	3616	5850	3910	3901
21-Apr-15										
22-Apr-15										
23-Apr-15				3854		3908		3779	3820	3840
24-Apr-15										
25-Apr-15										
26-Apr-15										
27-Apr-15	3850	3454	3324	3906	3348	3908	3564	3831	3820	3667
28-Apr-15										
29-Apr-15										
30-Apr-15				3854		3856		3676	3716	3776
01-May-15										
02-May-15										
03-May-15	3323									3323
04-May-15										
05-May-15	3842			3750		3752	3737	3762		3769
06-May-15										
07-May-15										
08-May-15										
09-May-15										
10-May-15										
11-May-15										
12-May-15	4264	3558	3116	3958	3882	3700	4065	3522		3758
13-May-15										
14-May-15									4653	4653
15-May-15									5017	5017
16-May-15										
17-May-15									4290	4290
18-May-15	4368			4165		4012		4193		4185
19-May-15										
20-May-15										
21-May-15									3199	3199
22-May-15										
23-May-15										
24-May-15										
25-May-15										
26-May-15										
27-May-15	4161			3931		4155		4177		4106
28-May-15										
29-May-15										
30-May-15										
31-May-15										
01-Jun-15										
02-Jun-15	3953			3802		4000		3935		3923
03-Jun-15										
04-Jun-15										
05-Jun-15										
06-Jun-15										
07-Jun-15										
08-Jun-15										
09-Jun-15	4005	3298	4103	3750	3651	4000		7605	3770	4273

[illegible]

[illegible]

The interpretation below was submitted to the ERCB on June 9, 2005 as part of a request to waive further isolation logging at N-pad and increase the allowable reservoir pressure at N-pad to 7500 kPa, re-logging the wells only if reservoir pressures were expected to exceed 7500 kPa.

Results of 2005-04 Hydraulic Isolation Logging

A temperature/radioactive tracer log was completed on each of the following wells to confirm hydraulic isolation of the Clearwater as per the N Pad approval:

AB/06-05-065-03W4/0 (N04)

AU/06/05/065-03W4/0 (N43)

AJ/06-05-065-03W4/0 (N31)

AG/07-05-065-03W4/0 (N06)

AH/07-05-065-03W4/0 (N08)

The logging procedure followed the general guidelines described in the AEUB Guide 51, Injection and Disposal Wells, Appendix 2: Logging Guidelines.

In summary, the logging data collected from each disposal well indicates there is no fluid migration out of the Clearwater Formation. Individual log interpretations are stated below and copies of the logs are attached for your records.

AB/06-05-065-03W4/0 (N04)

Log Date: 05-04-18

Clearwater Formation Top: 460.3 mKB

Plug Back Depth (PBD): 506.1 mKB

Perforations: 483.0 - 491.0 mKB

The log indicates hydraulic isolation of the Clearwater formation (disposal zone) as there is no evidence of radioactive material above the perforated interval. Fluid movement is occurring behind the casing to 493.4 mKB but it remains well above PBD which lies within the Clearwater formation. The temperature log data reflects the conclusions drawn from the tracer survey, there is no anomalous behavior above the perforations. The erratic behavior below the perforations is likely due to soft fill plugging the temperature probe as evidenced by the weight indicator.

AG/07-05-065-03W4/0 (N06)

Log Date: 05-04-19

Clearwater Formation Top: 496.0 mKB

Plug Back Depth (PBD): 550.9 mKB

Perforations: 527.0 - 535.0 mKB and 541.0 - 544.0 mKB

The log indicates hydraulic isolation of the Clearwater formation (disposal zone) as there is no evidence of radioactive material above the perforated interval. The temperature data reflects the conclusions drawn from the tracer survey, there is no anomalous behavior above the perforations due to injection.

AH/07-05-065-03W4/0 (N08)

Log Date: 05-04-20

Clearwater Formation Top: 501.5 mKB

Plug Back Depth (PBD): 552.5 mKB

Perforations: 522.0 - 530.0 mKB

The log indicates hydraulic isolation of the Clearwater formation (disposal zone) as there is no evidence of radioactive material above the perforated interval. The temperature data reflects the conclusions drawn from the tracer survey, there is no anomalous behavior above the perforations due to injection.

AJ/06-05-065-03W4/0 (N31)

Log Date: 05-04-21

Clearwater Formation Top: 443.4 mKB

Plug Back Depth (PBD): 493.3 mKB

Perforations: 465.0 - 473.0 mKB

The log indicates hydraulic isolation of the Clearwater formation (disposal zone) as there is no evidence of radioactive material above the perforated interval. Fluid movement is occurring behind the casing to 477.8 mKB but it remains well above PBD which lies within the Clearwater formation. The temperature data reflects the conclusions drawn from the tracer survey, there is no anomalous behavior above the perforations.

AU/06-05-065-03W4/0 (N43)

Clearwater Formation Top: 478.0 mKB

Perforations: 508.0 - 516.0 mKB

Log Date: 05-04-22

Plug Back Depth (PBD): 541.5 mKB

The log indicates hydraulic isolation of the Clearwater formation (disposal zone) as there is no evidence of radioactive material above the perforated interval. There is no evaluation below the perforated interval due to debris in the casing at 511.1 mKB, which would not allow the logging tool to pass. Given the log data collected from the other disposal wells, and the distance between the bottom of the perforations and PBD, the assumption can be made that if downward flow is occurring the fluid would remain within the disposal zone. The temperature data reflects the conclusions drawn from the tracer survey, there is no anomalous behavior above the perforations.

Imperial Oil believes that this logging once again has confirmed hydraulic isolation of the N Pad injectors. Prior to conversion, the N Pad injectors had been successfully operated through multiple (depending on well as seen on Table 1) cycles of high pressure CSS service. Prior to conversion the requirements of G51 were met through successful full length casing inspection logs, and radioactive tracer and temperature logging. As seen on Table 1, hydraulic isolation has been confirmed by temperature and tracer logging four times during the qualification for conversion, and operation of the disposal scheme on N Pad, which exceeds G51 requirements.

Table 1: Summary Of N Pad G51 & Hydraulic Isolation Activities

Disposal Well	Drill Date	High Pressure CSS Cycles Prior to	Casing Inspection Log Date	Date Hydraulic Isolation Confirmed	Reservoir Pressure at Logging	G51 Requirement
N04	1981	7	2000-Oct	2000-Oct	Pre-Conversion	Yes
				2001-Dec	2500 kPa	No
				2002-Jul	4500 kPa	No
				2005-Apr	4500 kPa	No
N06	1981	7	2000-Oct	2000-Oct	Pre-Conversion	Yes
				2001-Dec	2500 kPa	No
				2002-Jul	4500 kPa	No
				2005-Apr	4500 kPa	No
N08	1981	8	2000-Oct	2000-Oct	Pre-Conversion	Yes
				2001-Dec	2500 kPa	No
				2002-Jul	4500 kPa	No
				2005-Apr	4500 kPa	No
N31	1981	8	2000-Oct	2000-Oct	Pre-Conversion	Yes
				2001-Dec	2500 kPa	No
				2002-Jul	4500 kPa	No
				2005-Apr	4500 kPa	No
N43	1985	5	2000-Oct	2000-Oct	Pre-Conversion	Yes
				2001-Dec	2500 kPa	No
				2002-Jul	4500 kPa	No
				2005-Apr	4500 kPa	No

During April 2005 hydraulic isolation logging, the injection rate had to be increased to maintain a constant wellhead injection pressure for logging. Prior to logging the average measured bottomhole pressure was ~ 4468 kPa, but during logging the average was ~ 6210 kPa due to the increased injection rate. From these numbers it can be seen that the actual measured bottomhole pressure during logging was > 6000 kPa, thus hydraulic isolation has been confirmed, and fluid migration out of the zone is not occurring even at pressures higher than 4500 kPa.

If a micro-annulus is present between the production casing and primary cement, the logging has indicated that it is not conducting fluid outside of the zone. Casing Inspection logs were also run on the N Pad injectors prior to conversion, and the wells are subjected to packer isolation tests annually to confirm completion integrity. In summary, the N Pad injectors have gone through multiple high pressure CSS cycles, casing inspection logging and four separate radioactive tracer/temperature logs, all resulting in the conclusion that the injection zone is hydraulically isolated. With the combination of these monitoring activities, it is Imperial Oil's belief that the requirements of G-51 have been met and exceeded, and a waiver from further hydraulic isolation logging is requested.