

Thermal In-Situ Scheme Progress Report

JAPAN CANADA OIL SANDS LTD. HANGINGSTONE DEMO PROJECT 2005

Presented on Tuesday, March 7, 2006

Presentation Outline

1. Introduction

- Project Background, Activity Summary & Key Learnings

2. Compliance and Facility Performance

- Compliance & Approvals
- Source Water Pipeline
- Water Reuse
- Sulphur Dioxide Emissions
- Flare Gas Conservation
- Production Measurement and Reporting, Transportation

3. Reservoir

- Production Performance and Recovery Update

4. Geosciences

- Geology Update

5. Forward

- Demo Project Planned Activity

Introduction

Project Background

- JACOS – member of PCEJ consortium (Petro-Can, Nexen, Imperial, JACOS)
- SAGD Demo Project on former site of PCEJ Hangingstone CSS Project
- CSS Project mothballed in 1994; JACOS commenced development of SAGD Hangingstone Demo in 1997
- Phased Project Development –
 - 1999 – Phase 1; A, B wellpairs, 2000 bbl/day facility design capacity (original CSS site)
 - 2000 – Phase 2; C, D, E wellpairs, 4000 bbl/day facility design capacity added (new facility)
 - 2002 - Phase 3; F, H, I wellpairs, expansion of Phase 2 facilities to 8000 bbl/day design (expansion of new facility)
 - 2003 – J, K wellpairs, de-bottlenecking of facility to achieve design bitumen processing capacity (10,000 bbl/day)
 - 2004 – L,M,N wellpairs
 - 2005 – O,P,Q wellpairs

Activity Summary

➤ Q1 2005

- Drilled O,P,Q well pairs
- Cut back bitumen production in February because of low netback
- Commenced construction of piping and wellhead separator modules for new wells

➤ Q2 2005

- Confirmed and reported leak in fresh water pipeline
- Repaired major leaks and managed operation of line to minimize residual leak until winter conditions developed for construction of replacement line

➤ Q3 2005

- Started operation of O,P,Q well pairs
- Commenced development program for alternate source water aquifer (Deep-Quaternary)

➤ Q4 2005

- SO2 emissions above license limit were reported and actions were taken to address non-compliance (details in compliance section)

Key Learnings

- Sulphur dioxide daily emission limit did not reflect peak rates from daily process variability, as it was based on an average rate
- Non-ferrous material is recommended for the fresh water line replacement in order to avoid the corrosion problems that caused the failure of the existing line
- Even low pressure differentials between well pairs causes significant migration of steam between wells
 - Individual SORs are of minimal value once steam chambers coalesce

Compliance & Facility Performance

Compliance & Approvals

- To the extent of our knowledge JACOS is in compliance with all of the terms and conditions of Scheme Approval #8788.
- SO₂ license limit of 0.94 tonne/day was exceeded in 2005, resulting in following actions:
 - Production was cut back in early December in order to comply with current SO₂ limit;
 - JACOS filed two AENV amendment applications to increase SO₂ limit:
 - Notice of Decision granted on December 16 to increase limit to 1.24 tonne/day to reflect variability at current rates
 - Amendment Approval to increase limit to 1.631 tonne/day to address emissions at licensed plant capacity (11k bbl/day) is pending;
- Added line to tie-in vapour from flash separator to VRU to ensure compliance with approval terms (startup on February 21, 2006).
- In compliance with minimum water recycle ratio.
- Approval #8788 expires May 2006; Application to extend expiry date submitted November 2005; approval is pending.

Source Water Pipeline Failure Analysis



FIGURE 5 CLOSE-UP OF CORROSION PITTING AT PIPE BOTTOM



FIGURE 6 CORROSION PITTING ON SANDBLASTED INNER PIPE SURFACE

- Line installed 1990; suspended with inhibited fluid & cathodic protection in 1994; reactivated in 1998.
- Heavy internal corrosion pitting of pipe sample (2005)
- Carbonate scales present; no chloride salts or iron sulphide found.
- Traces of aerobic microbes, indicating the presence of oxygen
- Not clear how much corrosion took place during lay-up period or normal service
- Failure was internal corrosion, suspected to be caused by elevated levels of CO₂ in source water; aeration of water contributed to aggressiveness of the environment.

Water Pipeline Replacement Schedule

- Replacing 4” steel pipeline with 5” HDPE pipeline (larger size needed due to lower pressure rating)
- Pipeline will be plowed in place to reduce cost and minimize environmental impact; creek crossing will be directionally bored to minimize disturbance.
- Opportunity taken to develop alternate water source closer to facility. Approval expected Q2, 2006

Source Water Pipeline Replacement Project Schedule								
	2005 - 2006							
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Engineering	█	█	█	█	█	█	█	█
Regulatory & Approvals								
Design & Drafting								
Procurement								
Construction								

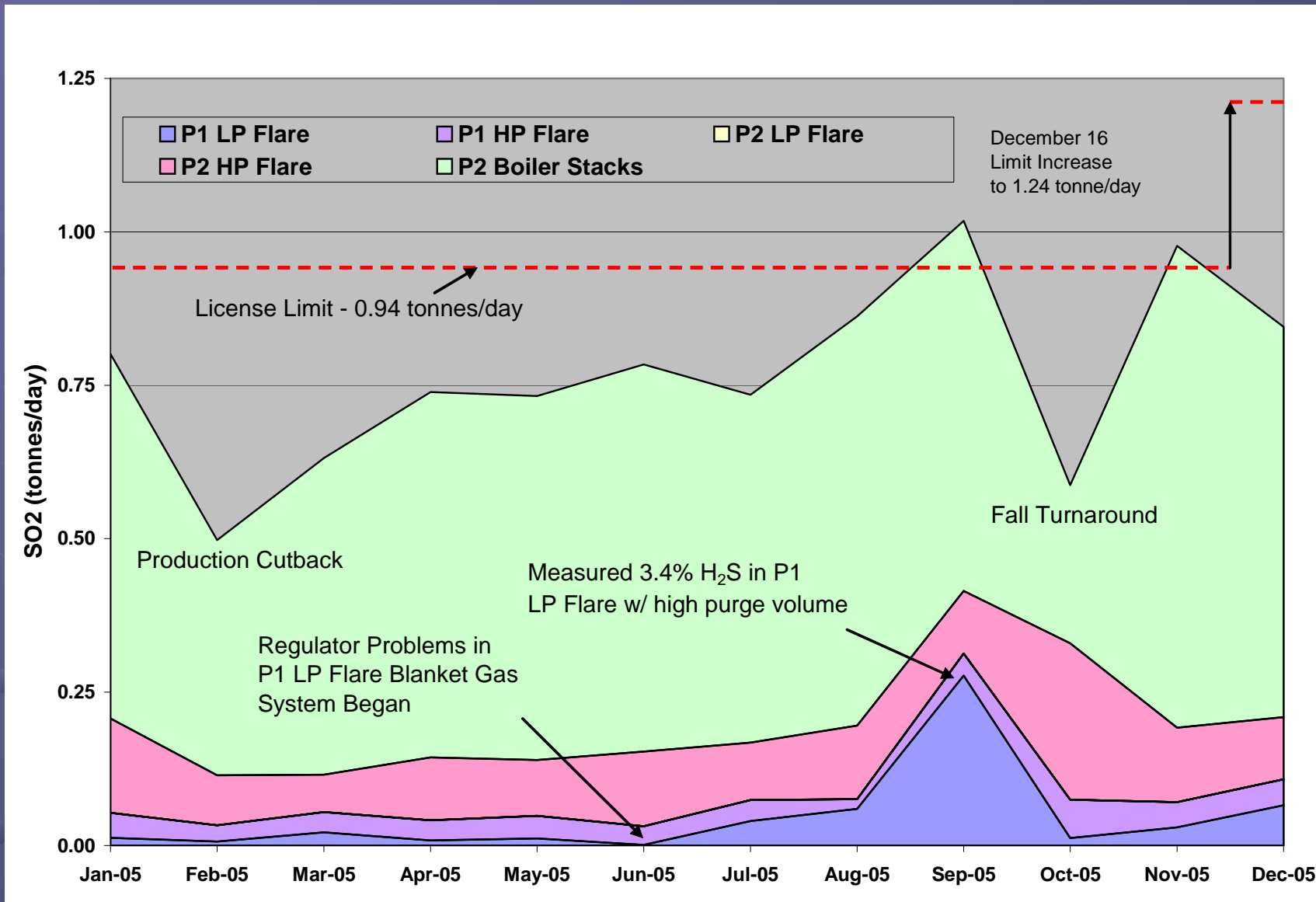
Water Reuse Performance Data - 2005

	Makeup Water			Injected Steam	Produced Water	Disposal Water			Recycle Ratio ^[1,2]
	Fresh Source Water	Pipeline Loss	Plant Inlet			JACOS Wells	Offsite Brine	Total	
	(m ³)	(m ³)	(m ³)			(m ³ CWE)	(m ³)	(m ³)	
Jan	16,226	0	16,226	123,638	115,245	5,976	0	5,976	93
Feb	27,522	9,100	18,422	73,091	61,263	4,580	0	4,580	89
Mar	30,382	10,075	20,307	108,831	99,470	5,852	0	5,852	89
Apr	26,782	8,292	18,490	126,958	117,890	4,391	0	4,391	92
May	17,406	2,393	15,013	120,979	114,445	4,170	0	4,170	93
Jun	21,203	1,200	20,003	120,705	110,934	3,410	0	3,410	91
Jul	15,732	1,085	14,647	126,306	115,709	1,528	504	2,032	96
Aug	14,792	473	14,320	127,169	117,022	1,190	421	1,611	96
Sep	16,006	0	16,006	123,691	116,035	1,530	449	1,979	93
Oct	16,532	242	16,290	90,680	88,378	6,243	251	6,494	84
Nov	17,517	2,087	15,430	129,820	122,849	1,593	600	2,193	93
Dec	21,191	3,000	18,191	129,515	119,879	1,601	865	2,466	93
2005	241,291	37,947	203,344	1,401,383	1,299,119	42,064	3,090	45,154	92
2004	180,289	0	180,289	1,213,436	1,127,939	44,808	0	44,808	92

[1] EUB Recycle Definition: (Steam Injected – Source Water Makeup)/Produced Water

[2] Based on plant inlet = makeup volume measured at plant.

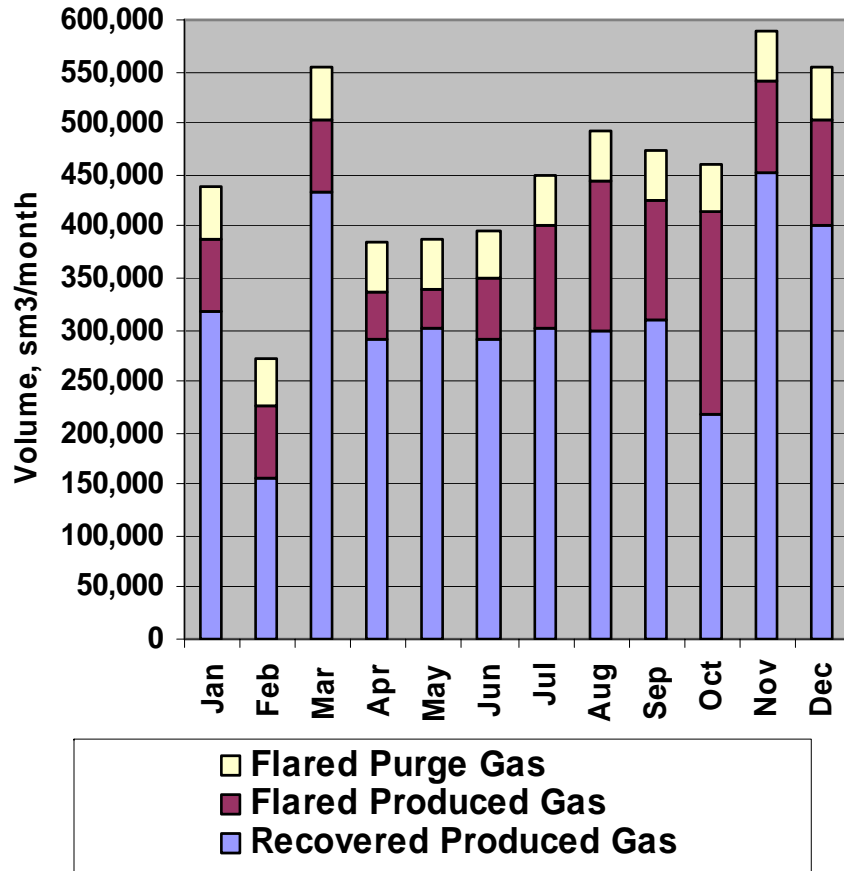
2005 Sulphur Dioxide Emissions (emissions by source)



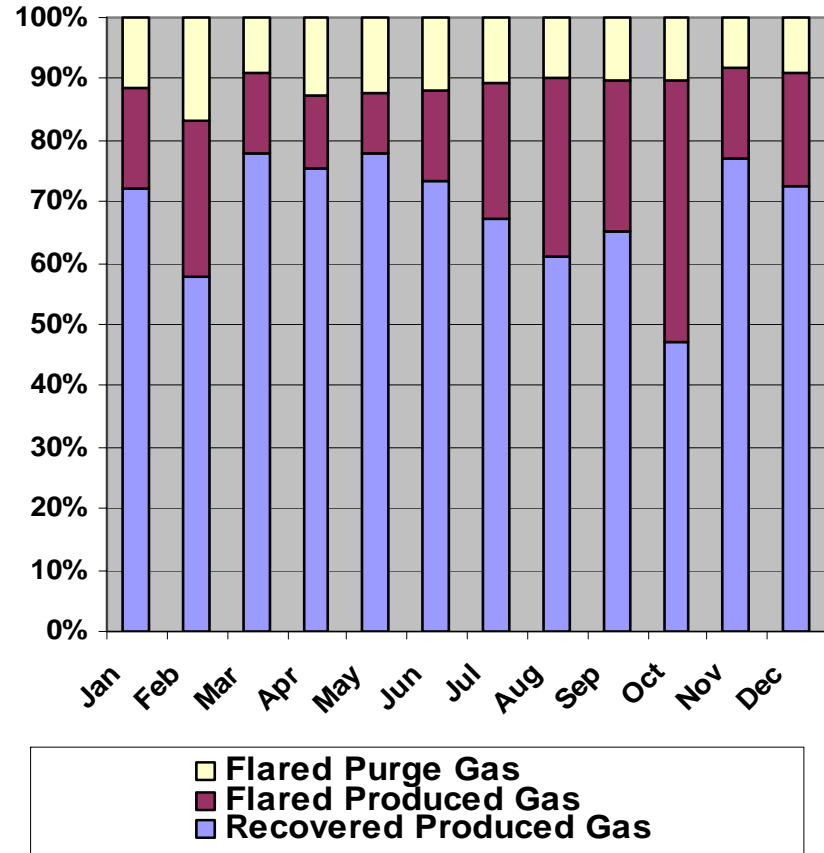
Note: Approval stipulates emissions calculated monthly based on concentrations from monthly sample, applied to daily measured volumes

Gas Conservation

Produced & Flared Gas Volumes



Percentage Recovered Produced Gas



Production Measurement and Reporting & Transportation

- **Production Measurement and Reporting**
 - Continue to use mass balance method to allocate bitumen production to individual wells; plant-wide bitumen is prorated to total tankage
- **Product Transportation**
 - Work continued with neighboring operators on arrangements with major pipeline operators.
 - Discussions with four pipeline operators are at various stages of advancement from informal discussions to formal proposals having been submitted

Reservoir

Reservoir Performance Summary

- Total field bitumen rate (average for December 2005) ~ 1300 m³/day
- Total Bitumen produced to December 31, 2005 ~1.686MM m³ (~10.6MM bbls)
- Cumulative SOR to date ~ 3.14
- Currently producing from 15 SAGD well pairs

2005 Net Pay Map

3.75 Area

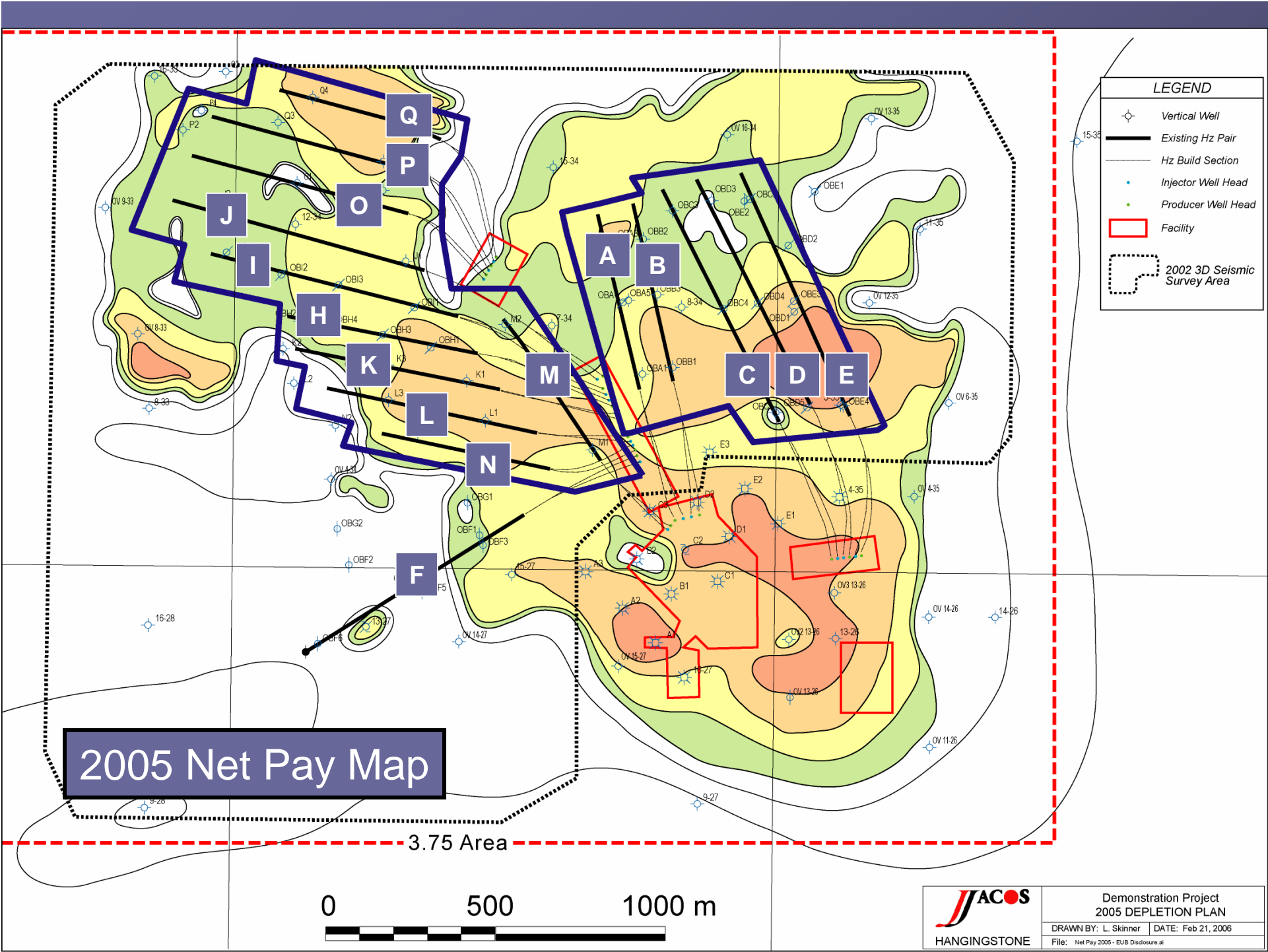


LEGEND

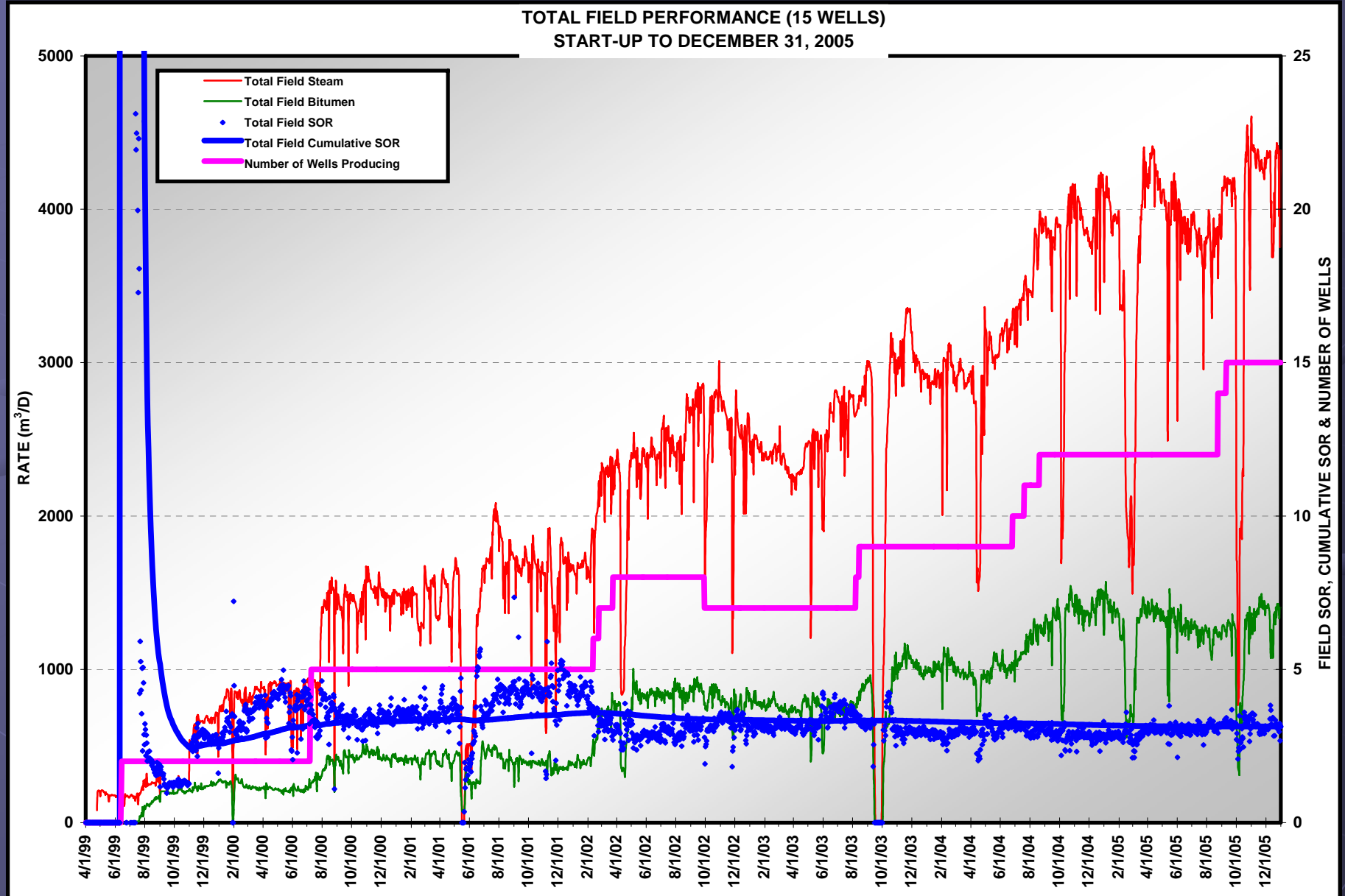
- Vertical Well
- Existing Hz Pair
- Hz Build Section
- Injector Well Head
- Producer Well Head
- Facility
- 2002 3D Seismic Survey Area



Demonstration Project
2005 DEPLETION PLAN
DRAWN BY: L. Skinner | DATE: Feb 21, 2006
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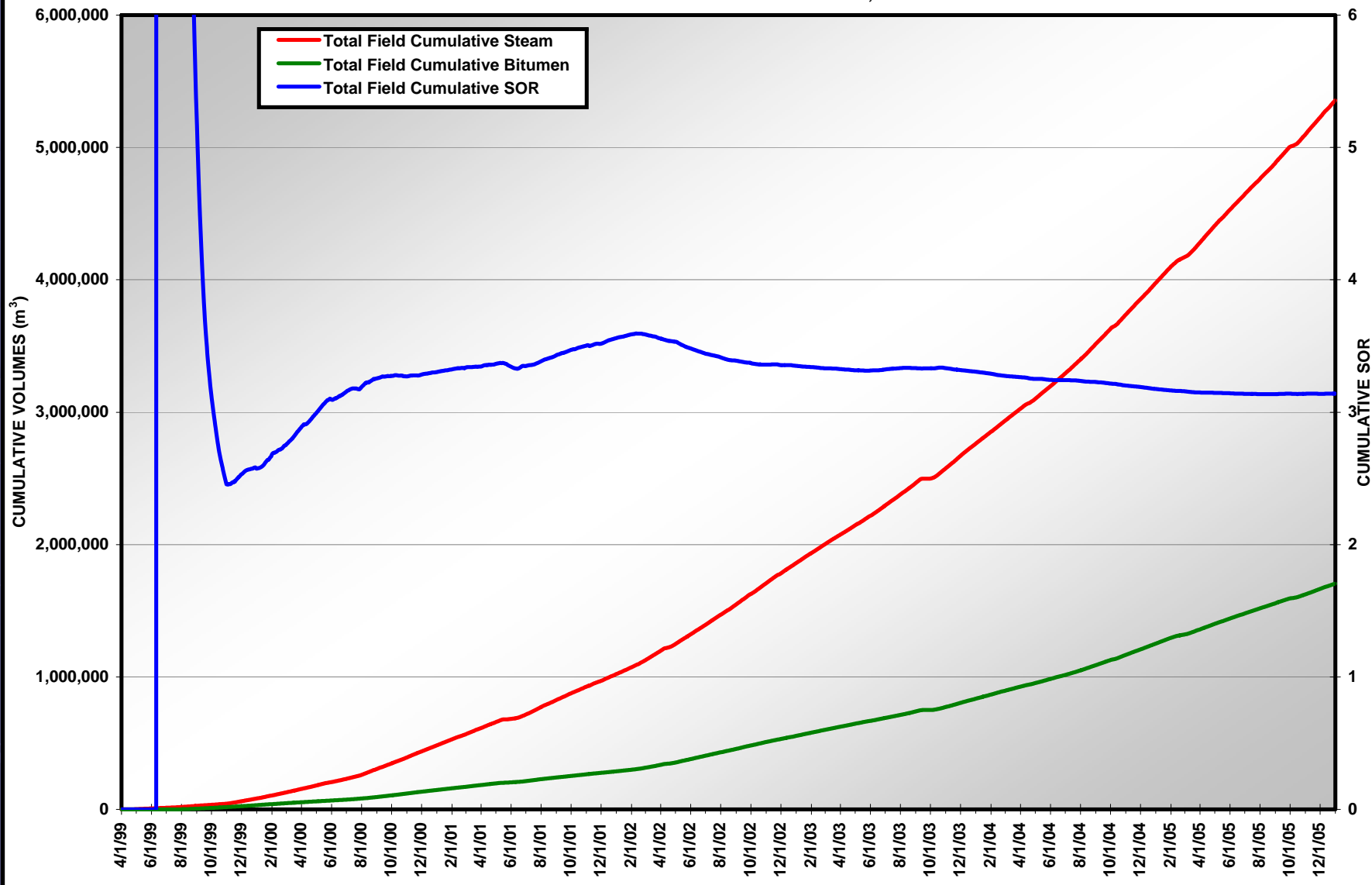


Overall Performance - Rates



Overall Performance - Rates

TOTAL FIELD CUMULATIVE VOLUMES (BITUMEN, STEAM AND SOR)
FROM START-UP TO DECEMBER 31, 2005



Reservoir Performance Statistics as of December 31, 2005

Start Year	Well Pair	Cumulative Steam Injected (m3)	Cumulative Bitumen Produced (m3)	Cumulative Water Produced (m3)	Cumulative SOR	Cumulative WOR	Recovery wrt OBIP (%)
1999	A	702,578	288,581	871,291	2.43	3.02	73.2 (*)
	B	958,461	206,580	739,546	4.64	3.58	59.7
2000	C	398,595	112,083	346,190	3.56	3.09	28.0
	D	379,301	88,553	319,448	4.28	3.61	21.4
	E	562,874	188,990	528,668	2.98	2.80	35.5
2002	F	46,219	3,434	21,822	13.46	6.35	1.3
	H	598,523	188,837	489,066	3.17	2.59	51.7
	I	567,895	210,598	559,596	2.70	2.66	44.7
2003	J	338,223	117,910	310,538	2.87	2.63	24.8
	K	272,614	98,712	267,384	2.76	2.71	27.9
2004	L	144,708	54,225	132,857	2.67	2.45	14.2
	M	191,097	93,591	175,749	2.04	1.88	25.3
	N	80,976	29,925	76,640	2.71	2.56	8.1
2005	O	35,066	7,828	33,862	4.48	4.33	2.1
	P	26,537	4,062	23,660	6.53	5.82	1.0
	Q	26,272	3,787	22,545	6.94	5.95	1.0
1999	A & B	1,661,039	495,161	1,610,837	3.35	3.25	66.9
2000	C, D & E	1,340,770	389,626	1,194,307	3.44	3.07	28.9
2002	F, H & I	1,212,636	402,869	1,070,484	3.01	2.66	36.9
2003	J & K	610,837	216,622	577,921	2.82	2.67	26.1
2004	L, M & N	416,780	177,742	385,246	2.34	2.17	15.9
2005	O, P & Q	87,875	15,677	80,067	5.61	5.11	1.4
	Field Total	5,329,937	1,697,696	4,918,861	3.14	2.90	27.0

(*) OBIP is calculated for a confined pattern with a 100m well spacing.

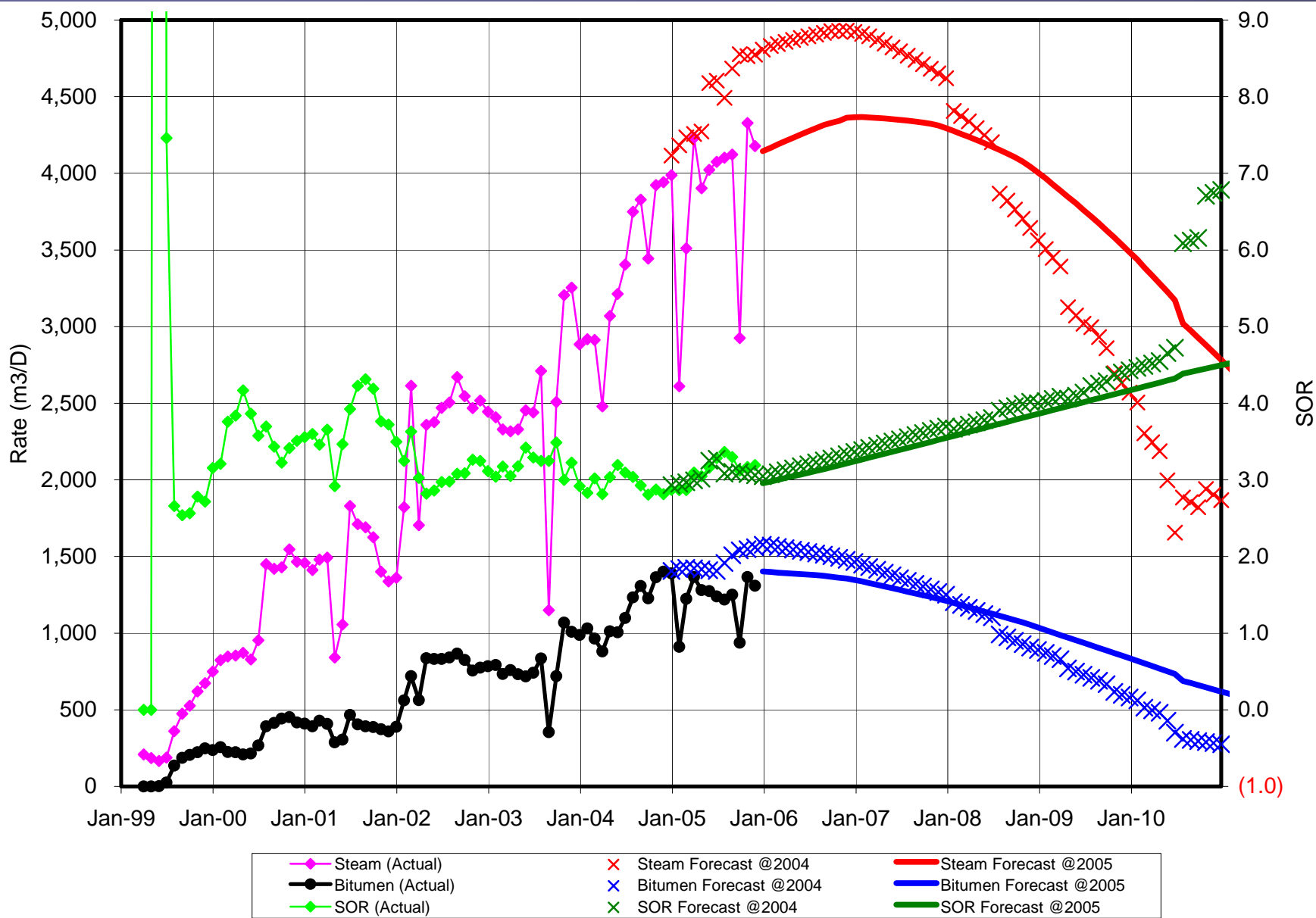
It is anticipated that the steam chamber for A & B pairs has grown beyond a 100m well spacing, and the relevant OBIP for A & B pairs should be larger and consequently the actual recovery factors should be lower.

Reservoir Performance Statistics for 2005

Start Year	Well Pair	Annual Steam Injected (m3)	Annual Bitumen Produced (m3)	Annual Water Produced (m3)	Annual SOR	Annual WOR
1999	A	93,045	41,711	156,321	2.23	3.75
	B	133,806	19,050	72,590	7.02 ^[1]	3.81
2000	C	70,929	23,308	62,608	3.04	2.69
	D	80,589	15,015	57,353	5.37	3.82
	E	110,043	40,863	117,080	2.69	2.87
2002	F					
	H	173,991	38,690	105,601	4.50 ^[2]	2.73
	I	93,465	42,074	118,476	2.22	2.82
2003	J	154,516	52,166	142,916	2.96	2.74
	K	104,752	39,230	110,006	2.67	2.80
2004	L	103,753	39,519	95,420	2.63	2.41
	M	135,911	60,696	127,280	2.24	2.10
	N	58,708	21,786	56,125	2.69	2.58
2005	O	35,066	7,828	33,862	4.48	4.33
	P	26,537	4,062	23,660	6.53	5.82
	Q	26,272	3,787	22,545	6.94	5.95
1999	A & B	226,851	60,761	228,911	3.73	3.77
2000	C, D & E	261,561	79,186	237,041	3.30	2.99
2002	F, H & I	267,456	80,764	224,077	3.31	2.77
2003	J & K	259,268	91,396	252,922	2.84	2.77
2004	L, M & N	298,372	122,001	278,825	2.45	2.29
2005	O, P & Q	87,875	15,677	80,067	5.61	5.11
	Field Total	1,401,383	449,785	1,301,843	3.12	2.89

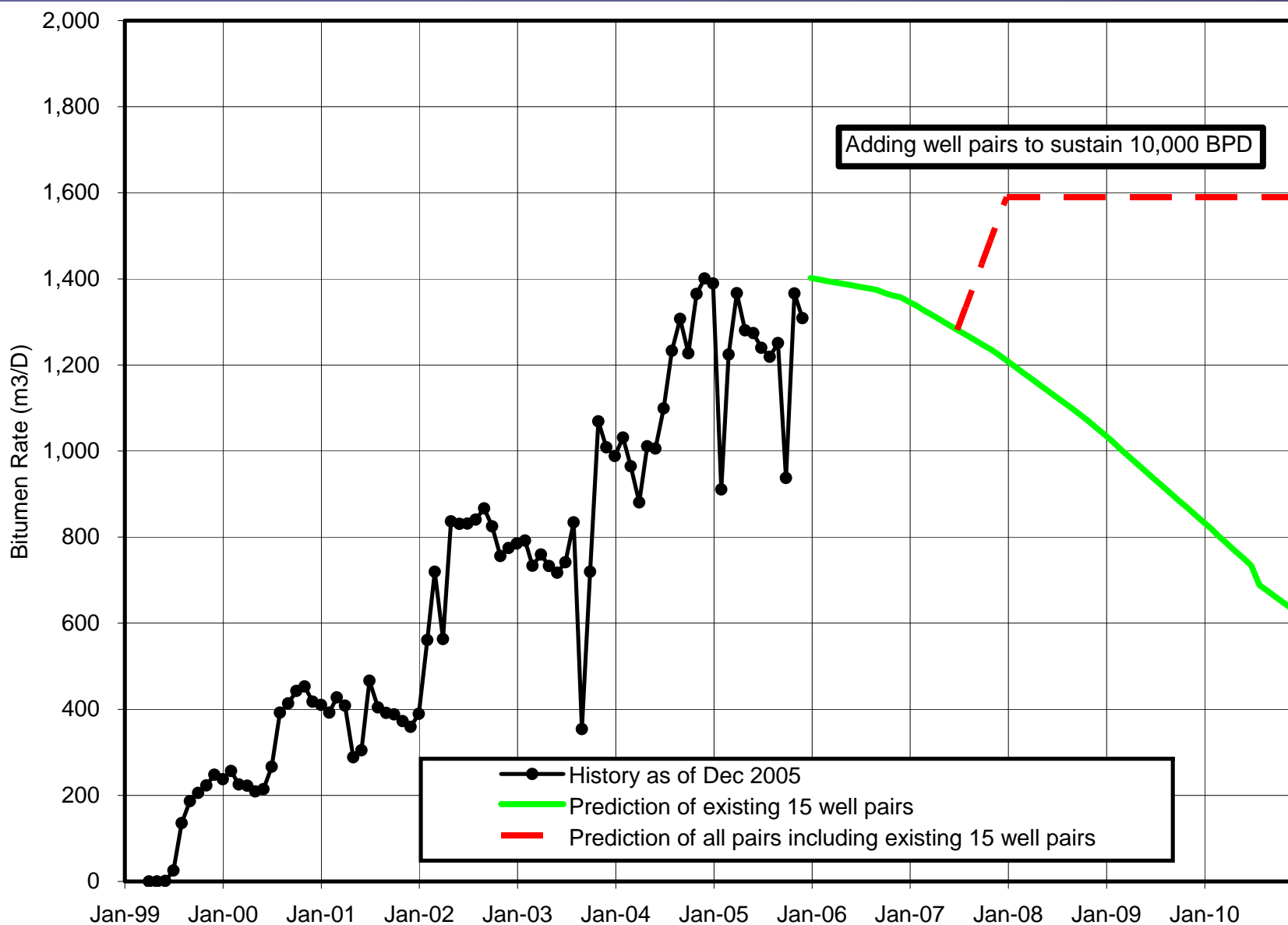
1. Reservoir sweep occurring from B to A
2. Reservoir sweep occurring from H to I and K

Existing15 Well Pair Forecast



(1.0)

Future Bitumen Production Profile



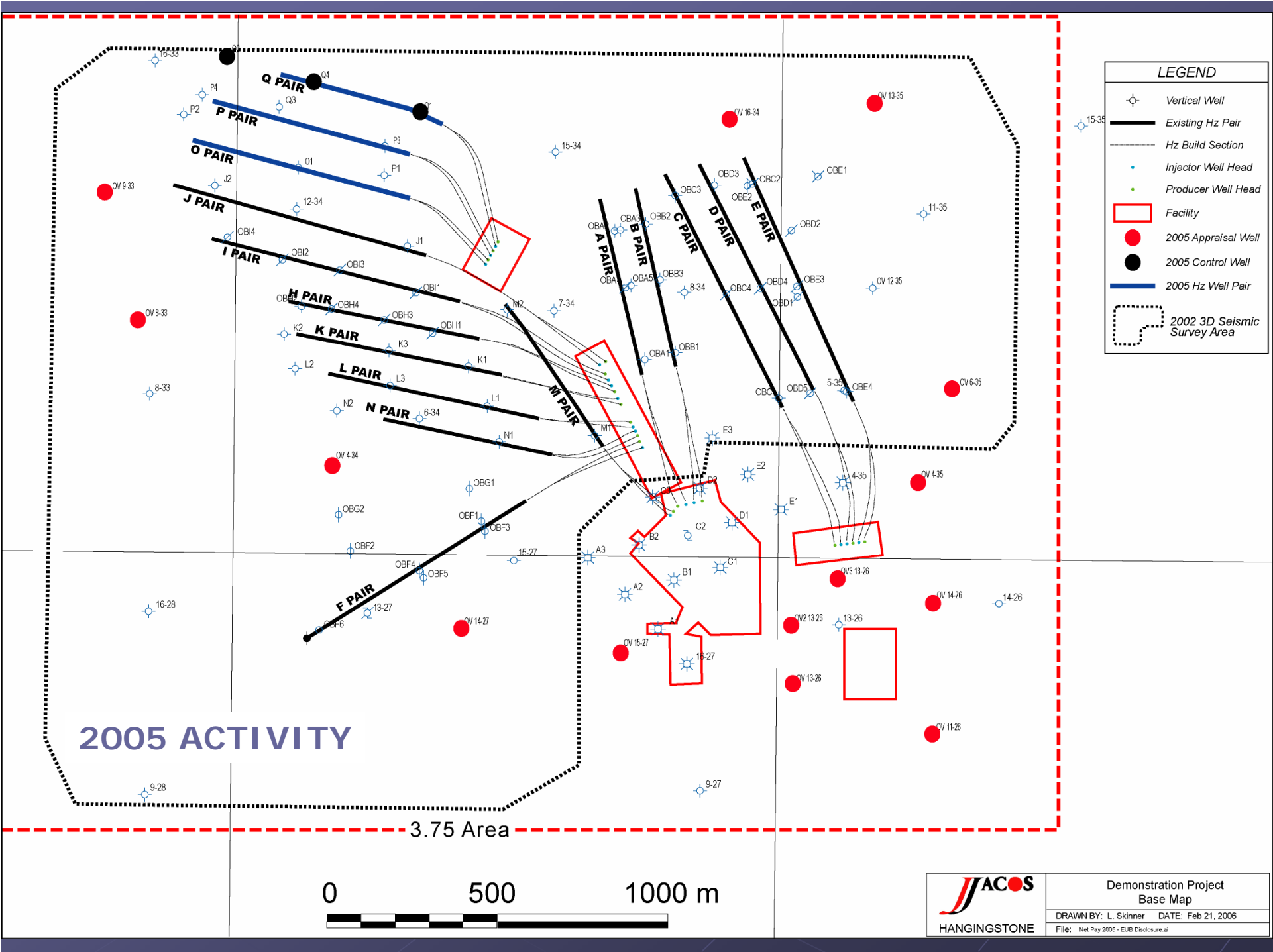
Geosciences

2005 Geosciences Activity

- 3 vertical control wells drilled
 - 3 wells to position the Q well pair
 - 1 well to confirm the O well pair midpoint facies in Q4 '04
 - 2 wells to position the P well pair heel and toe in Q4 '04
 - Used for facies identification and to vertically position the horizontal well pairs

- 3 horizontal well pairs drilled (O, P and Q)
 - Parallel well pairs in the NW area

- 14 appraisal core holes
 - To confirm the reservoir for future development areas (1 appraisal well in Q4 '04)



LEGEND	
	Vertical Well
	Existing Hz Pair
	Hz Build Section
	Injector Well Head
	Producer Well Head
	Facility
	2005 Appraisal Well
	2005 Control Well
	2005 Hz Well Pair
	2002 3D Seismic Survey Area

2005 ACTIVITY

3.75 Area



Demonstration Project Base Map	
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Forward

Demonstration Project Activity - 2006

- Drilling program for 4 additional SAGD well pairs - commencing Q1 2007
 - 3D seismic survey covering the SE area acquired Q1 2006
 - 3 2D seismic lines to assess the reservoir in Section 33 acquired Q1 2006
- Advance addition of steam generator to debottleneck plant processing capacity to license limit of 11,000 bbl/day bitumen
 - Test alternate fuel-firing such as bitumen (neat or emulsion form), co-firing with produced gas for commercial evaluation
- ***Amendment application to Scheme Approval #8788 for depletion plan & steam generator addition expected summer 2006***
- Assessing potential for blowdown water disposal into depleted SAGD patterns
- ***Submission of G51 application expected summer 2006***
- Evaluating solid waste disposal cost reduction with onsite landfill
- ***Submission of landfill application expected Q3 2006***
- Investigating potential to host solvent process pilot
- ***Submission of application for solvent pilot expected Q3 2006***
- 4D seismic covering the current production area to image the steam chamber growth acquired Q1 2006