



Project Summary Charts

Drilling and Deployment

- Season-To-Season Totals
- Season-To-Season Averages
- Season-To-Season Fuel Usage
- Fuel Usage Totals and Comparison
- Complete Hole History

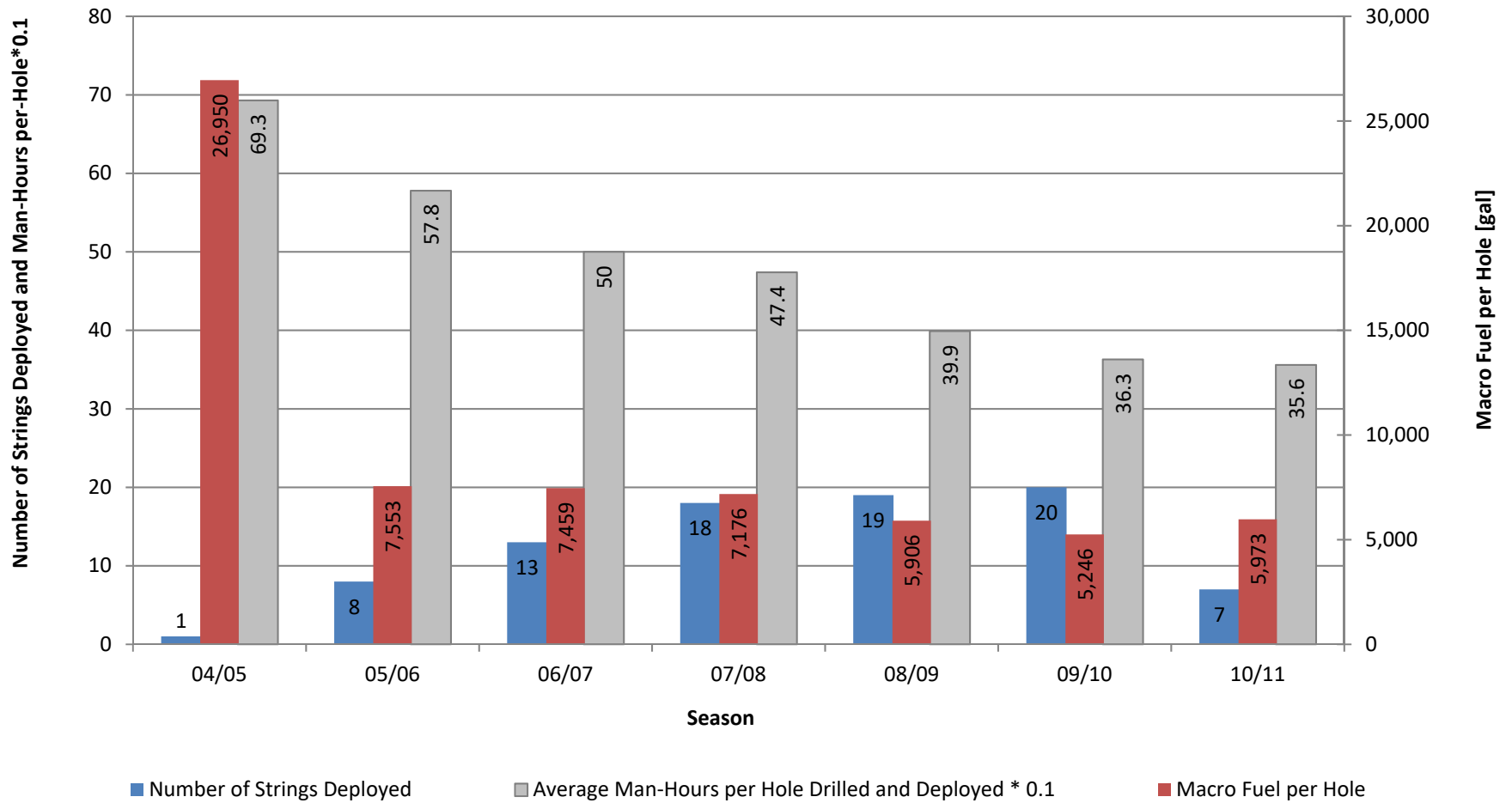
TLB

4/20/11

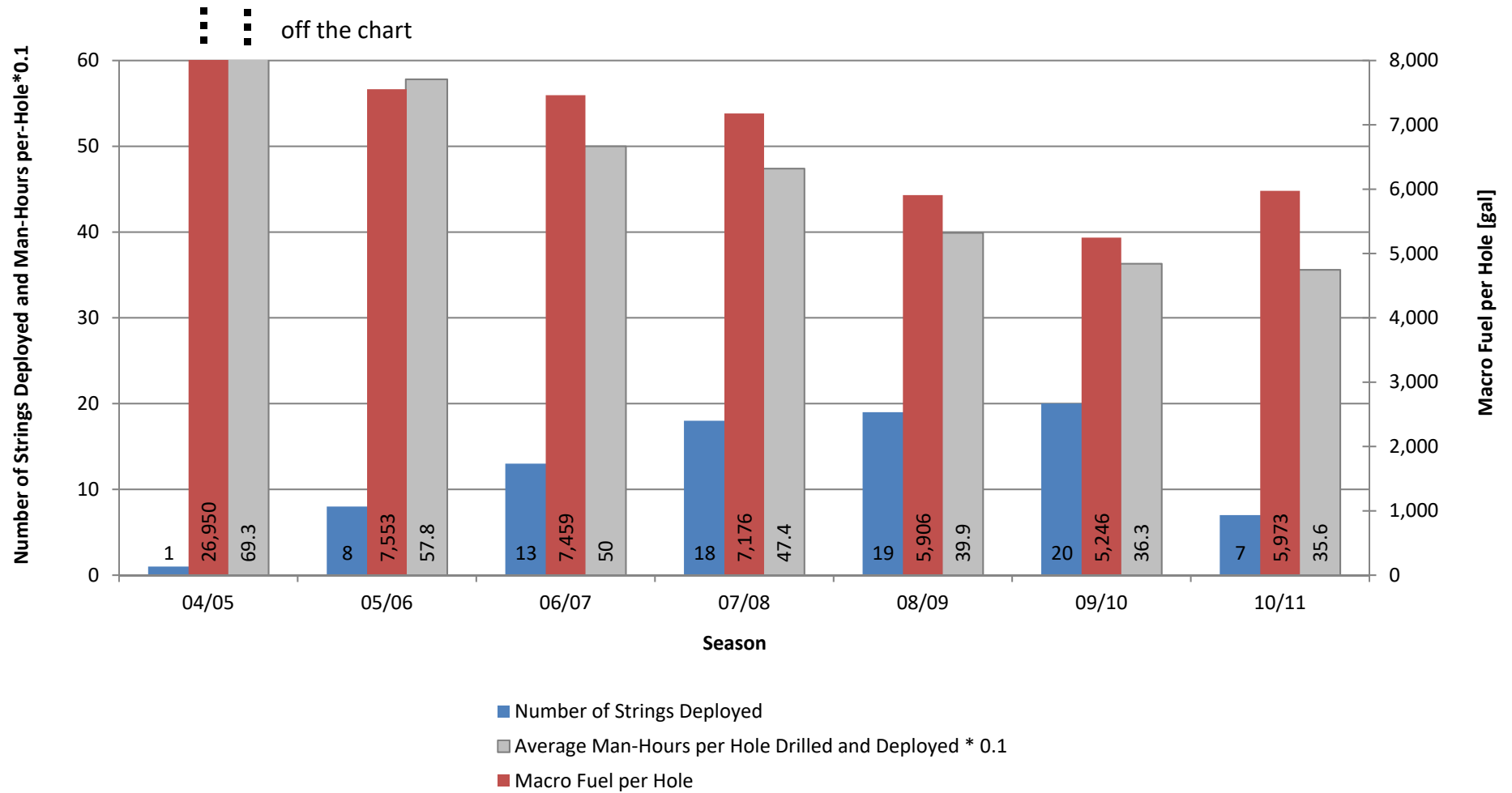
RAW data available in spreadsheet: 10-11HoleSummary_&_ProjectSummary_DrillDeploy_110418.xlsx

See <https://docushare.icecube.wisc.edu/dsweb/View/Collection-2066> for this and individual seasons' data

IceCube Drilling and Deployment History



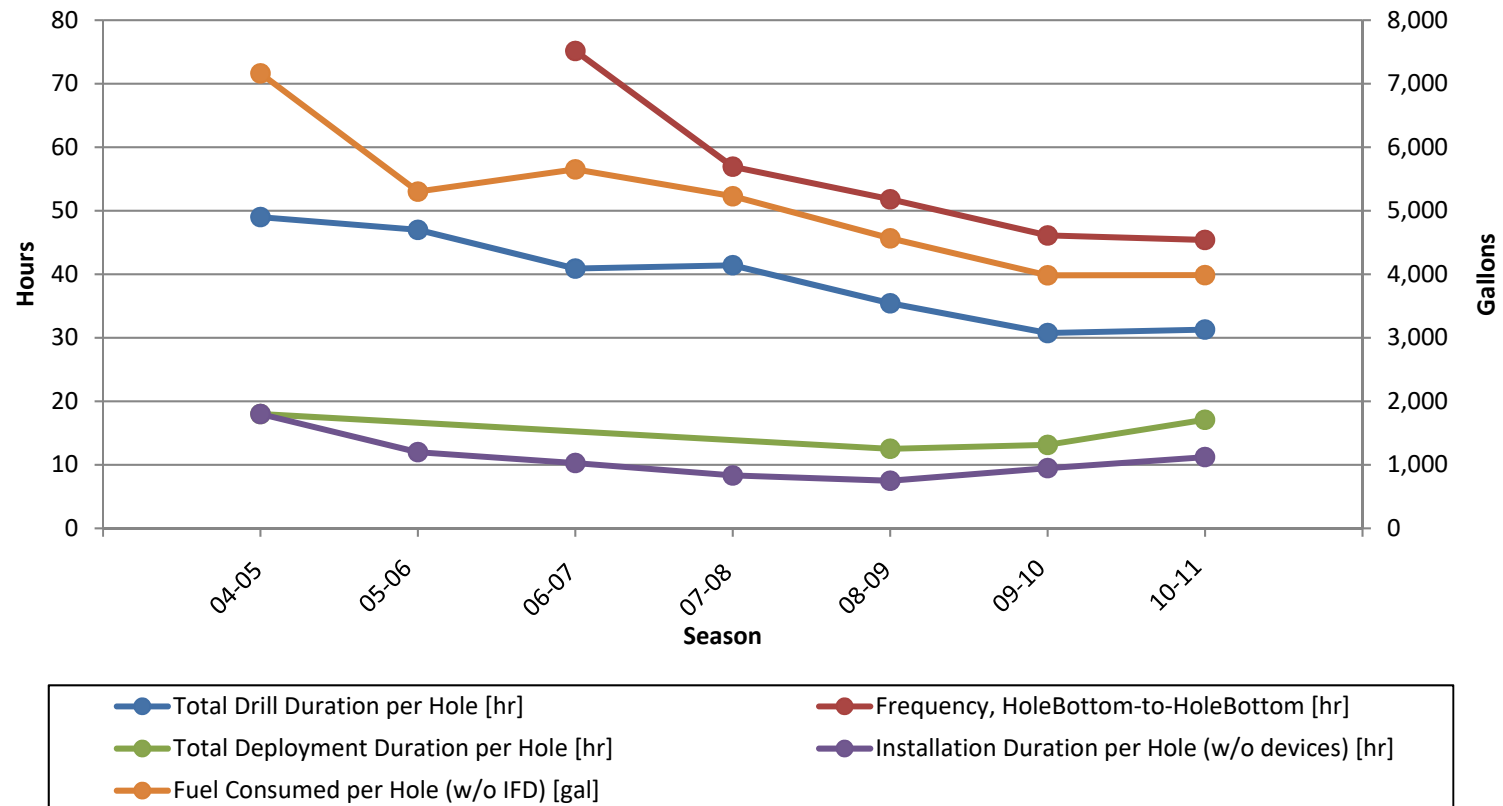
IceCube Drilling and Deployment History



SEASON-TO-SEASON AVERAGES

Season	Total Drill Duration per Hole [hr]	Frequency, HoleBottom-to-HoleBottom [hr]	Fuel Consumed per Hole (w/o IFD) [gal]	Total Deployment Duration per Hole [hr]	Installation Duration per Hole (w/o devices) [hr]
04/05	49	na	7164	18	18
05/06	47	na	5302	na	12
06/07	41	75	5652	na	10
07/08	41	57	5229	na	8
08/09	35	52	4567	13	7
09/10	31	46	3984	13	9
10/11	31	45	3986	17	11

SEASON-TO-SEASON AVERAGES



IceCube Drilling

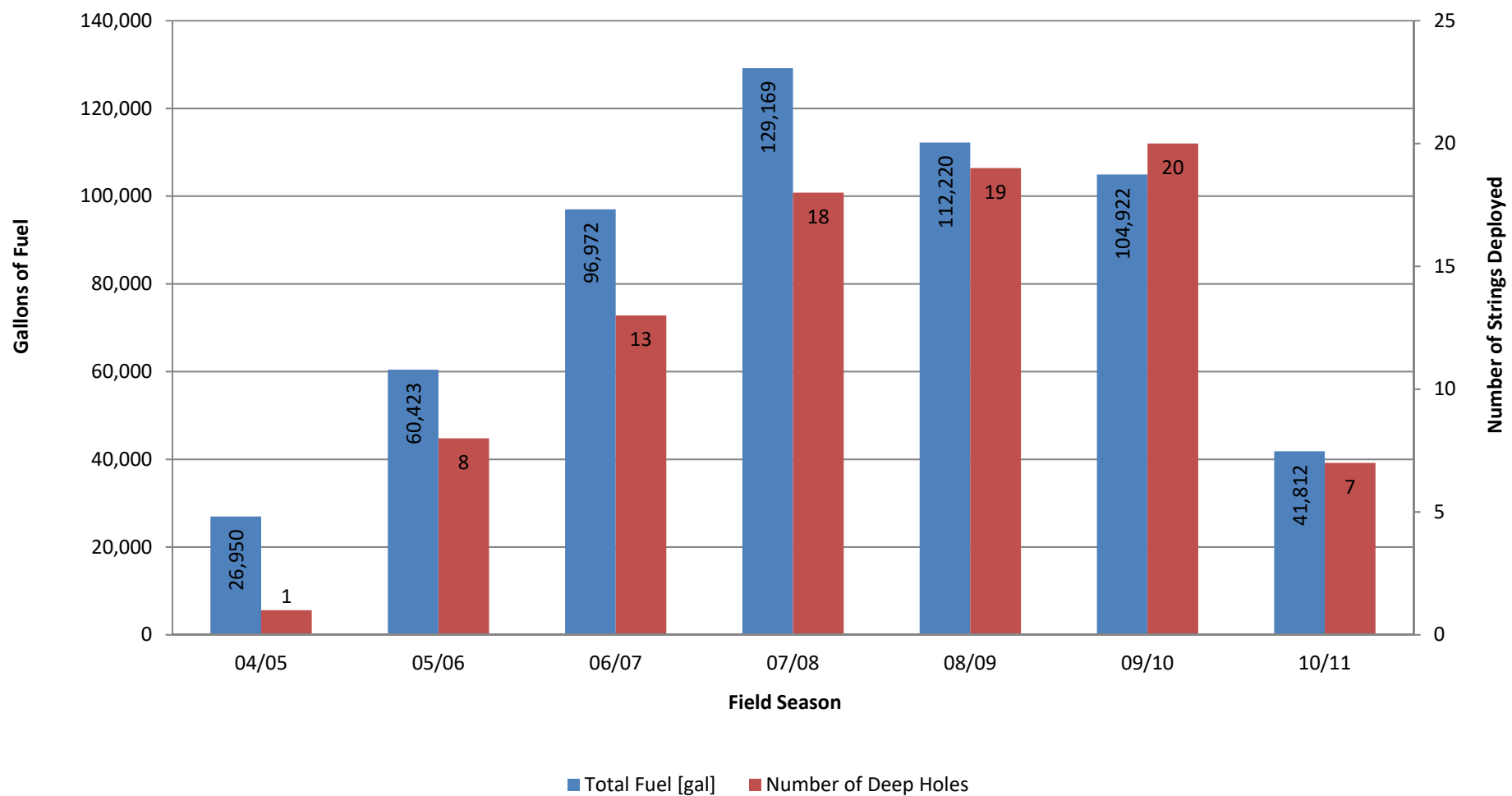
Fuel History

	04-05	05-06	06-07	07-08	08-09	09-10	10-11	SUM	AVERAGE
Number of Deep Holes	1	8	13	18	19	20	7	86	
Number of IFD Holes	1	8	14	22	20	25	0	90	
Total Fuel [gal]	26,950	60,423	96,972	129,169	112,220	104,922	41,812	572,467	
Accumulated Fuel [gal]	26,950	87,373	184,345	313,514	425,734	530,656	572,467		
Macro Fuel-Per-Hole [gal]	26,950	7,553	7,459	7,176	5,906	5,246	5,973		6,657 **
Deep Drilling [gal]	11,989	41,590	73,479	93,243	86,769	79,672	27,904	414,646	
<i>Per-Hole [gal/hole]</i>	-	5,302	5,681	5,229	4,567	3,984	3,986		4,791
<i>Ave Rate [gal/hr]</i>	-	-	-	-	128	130	128		128
IFD Drilling [gal]	-	1,433	5,217	6,153	4,821	5,106	-	22,730	
<i>Per-Hole [gal/hole]</i>	-	355	474	293	243	204	-		314
Deep + IFD Total [gal]	11,989	43,023	78,696	99,396	91,590	84,778	27,904		
Per-Hole, Deep + IFD [gal/hole]	7,164	5,652	6,155	5,522	4,810	4,188	-		5,582
Base [gal]	14,961	17,400	18,276	29,773	20,630	20,144	13,907	135,092	
<i>Startup [gal]</i>	-	-	-	-	8,182	8,841	5,966		7,663
<i>Shutdown [gal]</i>	-	-	-	-	1,055	1,748	5,362		2,722
<i>Other [gal]</i>	-	-	-	-	1,801	1,168	564		1,178
<i>Idle [gal]</i>	-	-	-	-	9,593	8,387	2,015		6,665
<i>Ave Idle Rate [gal/hr]</i>	-	-	-	-	19	16	15		17
Base-Per-Hole [gal]	14,961	2,175	1,406	1,654	1,086	1,007	1,987		3,468
Error, RPSC to IceCube Records [%]	-	-	-9.00%	1.50%	-1.40%	0.06%	0.84%		-1.60%

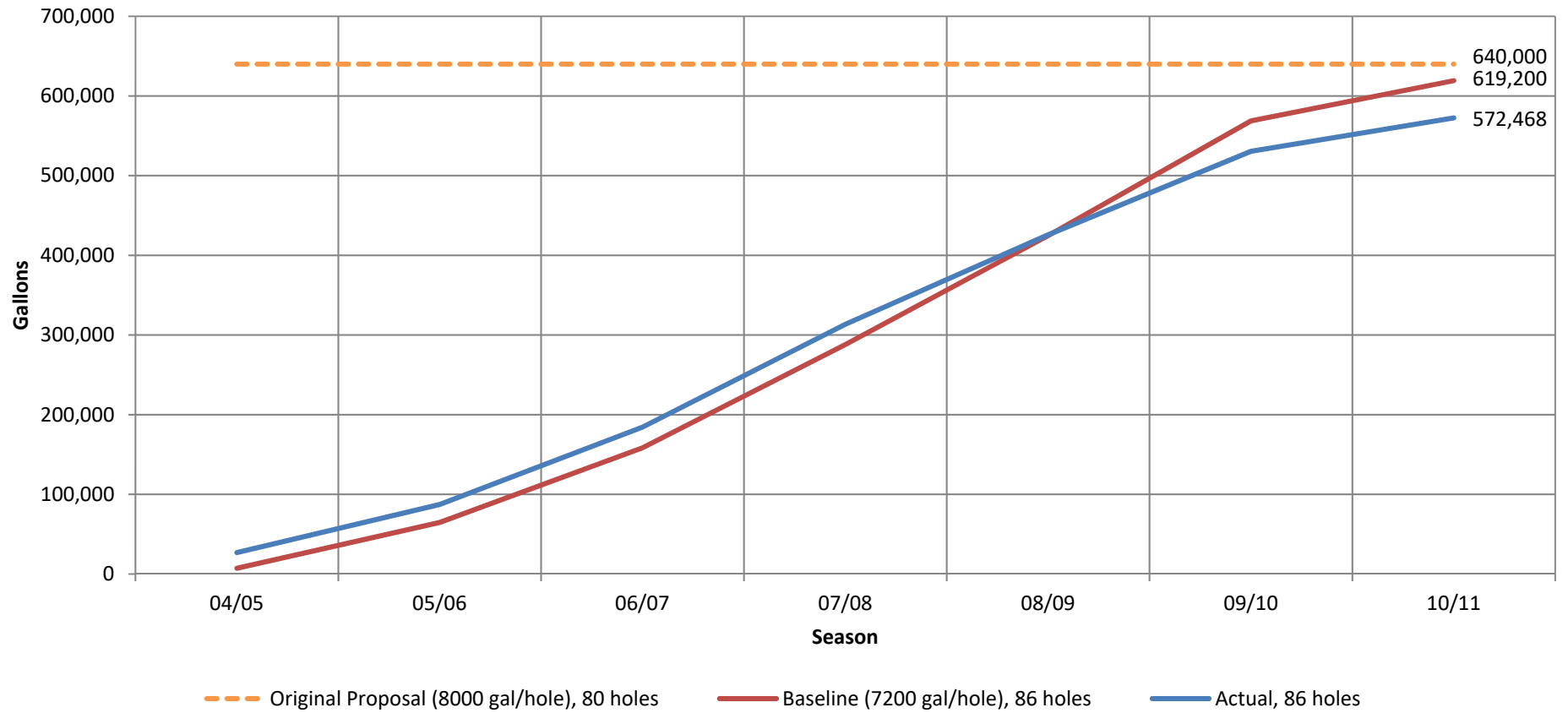
"-" = data not found or not available

** Calculated from (Total Fuel ÷ Number of Deep Holes)

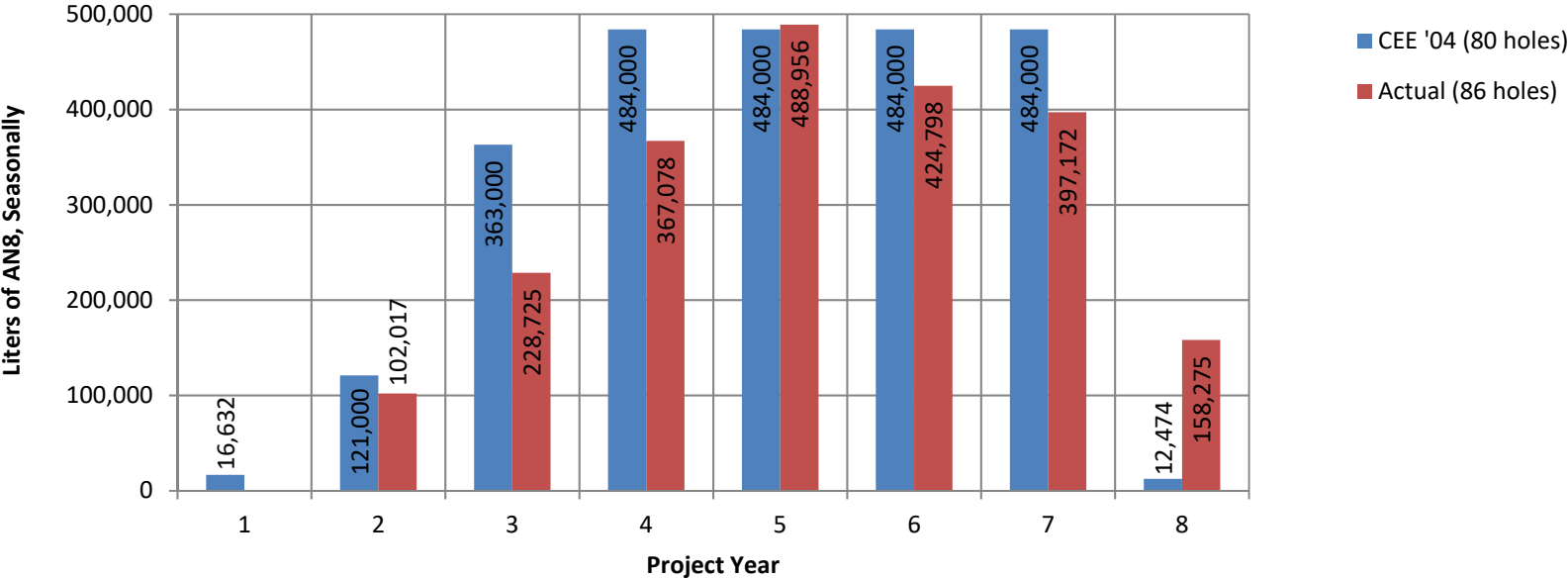
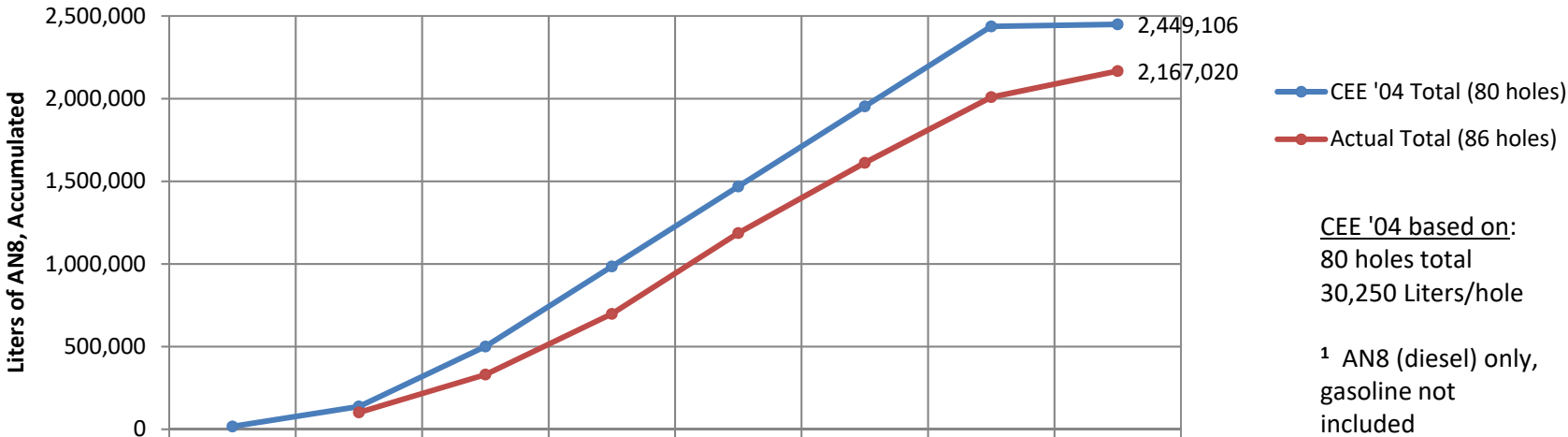
IceCube Seasonal Fuel Usage



Fuel: Baseline vs. Actual



CEE 2004 vs. Actual Comparison: Fuel (AN8 or diesel)¹



Commonly referenced stats for all holes

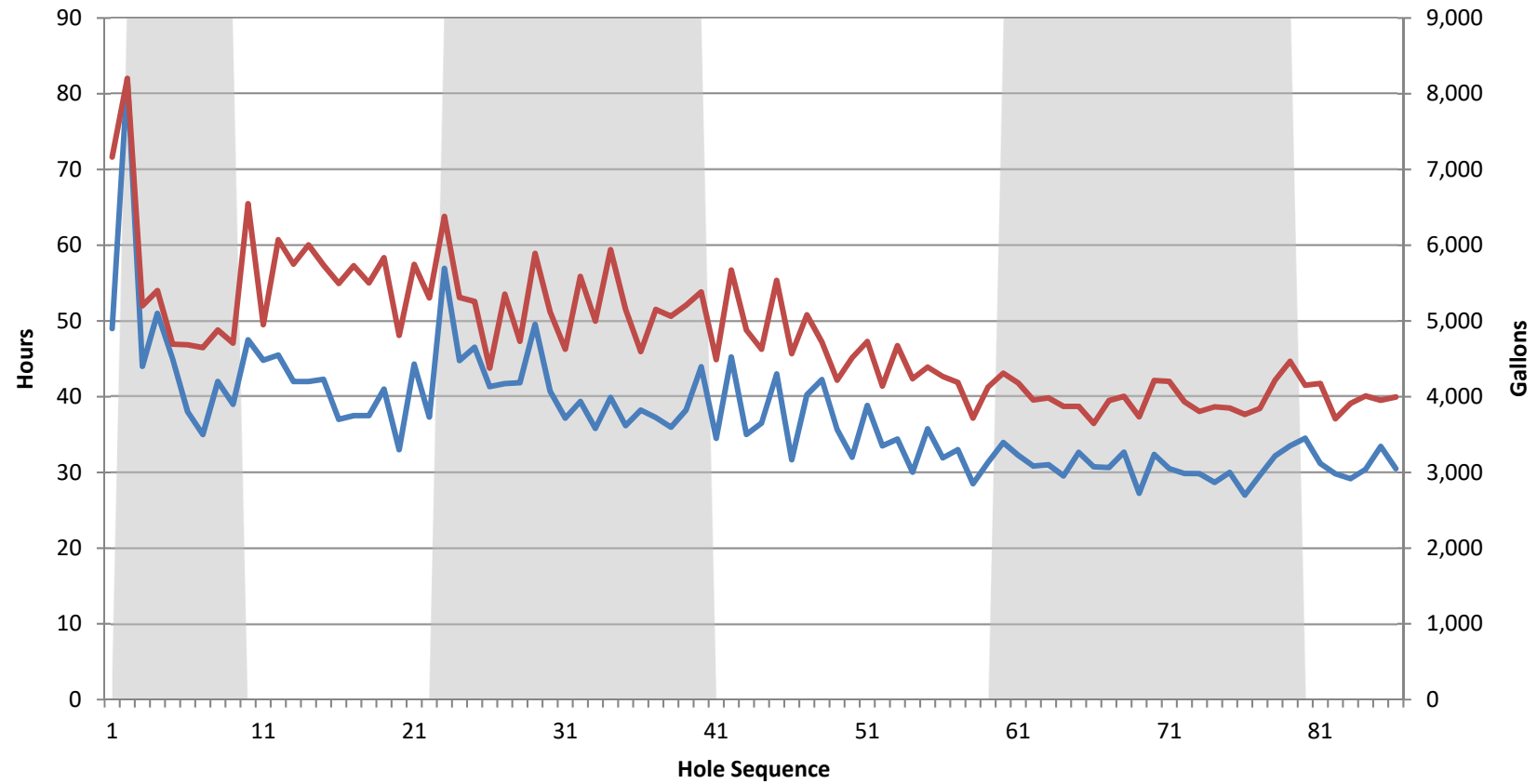
HOLE SUMMARY CHART, all seasons

* = Days off removed

** = Data not found or not available

Hole Number	Hole Sequence	Hole Location	Target Lifetime (hr)	Total Drill Duration (hr)	Frequency, HoleBottom-to-HoleBottom (hr)*	Issues/Notes	Fuel Consumed (w/o FDI) (gall)	Total Deployment Duration (hr)	Installation Duration (hr)	Special Devices
Overall Best			27.0	31.8			3647	8.5	4.6	
Overall Worst			82.0	99.0			8200	21.4	18.0	
Overall Average			37.3	54.9			4285	13.6	9.1	
B405 Season										
Best			49.0				7164	18	18	
Worst			49.0				7164	18	18	
Average			49.0				7164	18	18	
1	1	21a	-	49.0	-	Lots and lots of issues	7164	18.0	18.0	Dust Logger
B506 Season										
Best			35.0	48.0			4547			
Worst			82.0				6200			
Average			47.0				5302	12.0		
2	1	29	-	82.0	-	-	8200	-	-	-
3	2	38	-	44.0	-	-	5200	-	-	-
4	3	38	-	51.0	-	-	5400	-	-	Hole Logger
5	4	30	-	45.0	-	-	4884	-	-	-
6	5	40	-	38.0	-	-	4686	-	-	Hole Logger
7	6	50	-	35.0	-	-	4547	-	-	Hole Logger
8	7	59	-	42.0	-	-	4580	-	-	-
9	8	49	-	39.0	-	-	4707	-	-	-
B607 Season										
Best			33.0	52.0			4808		8.8	
Worst			47.5	99.0			6548		12.9	
Average			40.5				5652	10.3		
10	1	58	-	47.5	na	-	6548	-	10.3	-
11	2	67	-	44.8	92.0	-	4950	-	12.0	-
12	3	68	-	45.5	92.0	-	6072	-	12.0	-
13	4	74	-	42.0	99.0	-	5750	-	10.0	-
14	5	73	-	42.0	78.0	-	6003	-	9.5	-
15	6	65	-	42.5	83.0	-	5756	-	8.9	-
16	7	72	-	37.0	77.0	-	5484	-	10.3	-
17	8	78	-	37.5	85.0	-	5728	-	13.5	-
18	9	48	-	37.5	70.0	-	5503	-	8.9	-
19	10	57	-	41.0	84.0	-	5835	-	9.2	-
20	11	47	-	33.0	65.0	-	4988	-	12.5	-
21	12	46	-	44.3	85.0	-	5747	-	9.0	-
22	13	56	-	37.3	52.0	-	5305	-	8.8	-
D708 Season										
Best			36.8	48.0			4376		5.0	
Worst			66.9	93.0			6380		11.9	
Average			41.4	56.9			5229	8.3		
23	1	63	-	56.9		Winch	4380	-	10.0	
24	2	64	-	44.8	93.0		5310	-	11.9	Hole Log
25	3	55	-	46.5	83.0		5257	-	8.8	Plug/SC
26	4	71	-	41.5	70.0		4376	-	13.3	Ping
27	5	70	-	41.7	58.0		5354	-	9.9	Ping
28	6	76	-	41.9	56.0	Damaged Reel, Hose Swap	4741	-	6.8	SPN/IS Dep
29	7	77	-	49.6	65.0	Hose Swap	5882	-	9.6	Ping
30	8	75	-	40.7	53.0	Hose Swap	5119	-	6.3	
31	9	69	-	37.2	53.0		4528	-	6.7	
32	10	60	-	39.4	53.0		5588	-	9.0	
33	11	68	-	35.8	47.0		4997	-	7.9	Inclino
34	12	61	-	38.5	54.0		5841	-	8.7	
35	13	62	-	38.2	49.0	DV Visits, Misplaced Yoke Grips	5152	-	8.9	
36	14	52	-	39.2	50.0		4984	-	5.3	Dust Log
37	15	44	-	37.3	50.0		5150	-	7.2	Inclino
38	16	53	-	38.0	48.0		5062	-	5.0	Hole Log
39	17	54	-	38.2	54.0		5305	-	7.5	Hole Log
40	18	45	-	44.0	54.0	Hose Swap, Insulation	5382	-	9.3	Inclino
B809 Season										
Best			28.5	34.8			3716	8.5	4.6	
Worst			45.3	72.6			5671	18.3	12.1	
Average			36.4				4587	12.5	7.5	
41	1	18	33	34.5	na	TOS cable payout encoder	4489	16.2	9.2	
42	2	27	33	49.3	66.7	level winds	2671	11.3	7.6	
43	3	36	33	35.0	67.5		4877	14.7	7.2	Shallow NARC
44	4	28	30	36.5	47.2		4527	14.3	8.8	Pinging
45	5	19	30	43.0	65.9	double drill logging experiment	5537	11.1	5.2	Hole Logger, Pinging
46	6	20	30	31.7	43.2		4587	15.1	12.1	
47	7	13	30	40.2	49.2	2 hose swaps	5080	9.3	4.6	
48	8	12	30	42.5	45.0	drill comm's start hole swap	4741	8.5	6.0	
49	9	6	27	35.7	58.9	digital hose + drill hose swap	4218	13.6	7.9	Shallow NARC
50	10	5	27	32.0	52.1		4514	12.0	7.0	
51	11	11	27	38.6	72.5	surface + drill hose swap	4728	10.2	6.9	Pinging
52	12	4	27	33.5	47.5	gen1 fan comes loose	4140	11.3	9.0	
53	13	10	30	34.4	42.9		4614	18.3	7.0	Dust Logger & Deep NARC
54	14	3	27	30.0	51.5		4237	10.2	6.0	Deep Core
55	15	2	27	35.7	43.9	level winds (DSHR phasing)	4381	13.5	5.5	Dust Logger
56	16	1	27	31.8	43.9	DSHR level wind drive key	4286	13.5	10.8	
57	17	37	24	33.0	52.9	hose swap	4188	10.9	5.7	Pinging
58	18	26	24	28.5	43.5		3716	12.5	7.5	
59	19	17	24	31.3	34.8		4107	11.2	8.4	
B910 Season										
Best			27.0	31.8			3647	9.2	6.1	
Worst			33.9	77.8			4467	17.7	12.6	
Average			30.8	56.1			3984	13.1	9.5	
60	1	8	27	33.8	na	Return water pump drive failure	4310	17.0	12.6	NARC 1 and 2
61	2	9	27	32.3	47.5		4180	15.5	12.5	NARC 1 and 2
62	3	16	24	30.8	46.4	Load cell amplifier box connector: loose	3956	13.4	8.1	Pinging NARC 1
63	4	25	24	31.0	45.0	wire	3983	15.0	10.7	Pinging
64	5	85	24	29.5	50.7		3872	13.6	10.6	
65	6	84	24	32.7	48.7	Gen3 back, but syncing failed	3871	14.8	9.0	NARC 2
66	7	82	24	30.7	47.8	No camp comm's at start of hole	3647	11.4	8.3	NARC 2
67	8	81	24	30.8	47.2	Generator dropout during ream	3988	14.3	9.8	Pinging
68	9	86	30	32.7	44.2		4504	17.7	11.5	Dust Logger
69	10	36	24	27.4	58.6	Load cell issues at startup	3744	12.0	8.4	
70	11	34	24	32.4	38.4	Gen3 drops out 4 hrs in	4214	14.0	8.1	Badly Sealed Joint, NARC 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Drill Duration and Fuel Use, All Holes



seasonal split

Total Drill Duration [hr]

Fuel Consumed (w/o IFD) [gal]

Glossary

- Macro Fuel per Hole: Total Seasonal Fuel Usage ÷ Number of Holes that Season
- Total Drill Duration: Deep Drill Time + Ream Time
- Frequency: Frequency of holes, measured between hole bottoms
- Total Deployment: End of Drilling to Tie-Off
- Installation Duration (w/o devices): Start of DOM Installation to Tie-Off, minus any special devices during this time