APPENDIX F

BIOLOGICAL OPINION SPILL

BiOp SPILL CALCACULATIONS.

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November 3, 2003

Spill calculations

The calculations of BiOp spill for juvenile fish passages are based methods I have been using for several years to monitor how well the projects and BPA are implementing juvenile fish spill based on the instructions given to the projects and BPA by the Corps via teletypes. I have developed excel spreadsheets that display the actual project spill and calculate the spill specified for juvenile fish passage (BiOp spill). I display both these values on a graph so that with a quick glance I can see how the project and BPA are doing.

The functions that I have developed, to calculate BiOp spill, take into consideration the BiOp spill requirements, the 120/115% gas cap in effect, the minimum generation requirements, any major tests that are going on during the spill season, and in some cases the 1% efficiency unit operating requirements. I am glad to share the code (visual basic) I use. Each project has it's own function. Each year I have to modify several of the functions to take in to consideration any changes in effect for the current year. These changes are usually due to research ongoing at the project (Like the RSW test at Lower Granite). Sometimes changes are needed due to changing instructions to the project. For example in 2001 there was a minimum spill level of 15 kcfs set at The Dalles. I do not always adjust my functions to take care of short tests at projects, like a three-day spill test, or other short-term regulation changes.

One item to consider when seeing if the projects and BPA are complying with their instructions is the how the projects operate the spill gates. The spill gates are opened a number of stops. These stops are a set distance. For example, a stop may be 1 foot. The project can open the gate 1 stop (1 foot) or 2 stops (2 feet) but not 1.5 stops. This means that the project can spill certain amounts; lets say for example 98 kcfs or 102 kcfs (each additional stop open increases spill 4 kcfs) but not 100 kcfs. So if the spill cap at the project were 100 kcfs the project would spill 98 kcfs not 102 kcfs, which would be over the spill cap. See the spill patterns in the Fish Passage Plan for examples of this.

Project specific info for the 2003 spill season.

BON

Spill started 4/14 at 0500. From 4/14 to 6/26 daytime spill alternated between 75 kcfs (fallback limit) and spilling to the gas cap. The purpose of alternating the spill was to determine the effect of the spill level on adult passage. After 6/27 the daytime spill was at the 75 kcfs (fallback limit). Spill ended 8/31 2400.

TDA

Spill started 4/14 at 1800. On 4/17 from 0700 – 1700 spill was limited to bays 12 – 22 so the fish release pipe could be reinforced. From 5/20 to 6/10 a series of special spill amounts and spill patterns were used as part of a balloon tag test. The purpose of this test was to test juvenile fish survival The spill patterns used were for a four per-bay discharges (9, 12, 18 and 21 Kcfs) to approximate stilling basin hydraulic conditions that would occur below bays 2 and 4 as if there were a training wall running from pier 7 to the endsill Spill ended 8/31 2400.

JDA

There was a spill for hydraulic data collection 4/10. Spill for juvenile fish passage started 4/14 at 1800. From 4/18 to 6/8 nighttime spill alternated between 45% and 60% of total flow. From 6/27 to 7/21 the spill alternated between 0% daytime/ 60% nighttime spill and 30% spill all day. The purpose of these tests was to determine the effect of juvenile fish passage and survival on different levels of spill. Spill may be adjusted for navigation purposes. Spill ended 8/31 2400.

MCN

Spill started 4/14 at 1800. Spill may be reduced to help to juvenile fish barge loading. No spill 4/28 from 1000 – 1200 to adjust fish tracking equipment. Due to problems with gate hoists the spill pattern used was changed several times. Spill ended 6/20 0600.

IHR

Spill started 4/9 at 1800. From 4/23 to 7/25 spill alternated between the BiOp spill amount and spilling 50% of the project outflow. The purpose of this test was to determine the effect of juvenile fish passage and survival on different levels of spill. On 6/13 and 6/23 from 1300 – 1600 spill was limited to bays 4-6 in order to remove and then reinstall some equipment. Several different spill patterns were tested in order to see the effects the patterns had on juvenile fish mortality and injury. From 6/24 to 7/16 spill was alternated between the BiOp spill amount in a bulk spill pattern and no spill. Again this test was to determine the effect of these changes of juvenile fish passage and survival. On 7/15 a balloon tag test occurred in the spillway. On 7/17 spill was changed to spill from 2000 – 0800 and no spill from 0800 – 2000. Again this test was to determine the effect of these changes of juvenile fish passage and survival. Spill ended 8/31 2400.

LMN

Spill started 4/7/at 1800. Spill was either 45% or 50% of the total project outflow depending on the outflow. The amount of spill from bays 1 and 8 due to problems high spill was causing. Spill was used for debris removal several times. Spill ended 6/20 at 0600.

LGS

Spill started 4/5 at 1800. Spill ended 6/20 0600.

LWG

Spill started 4/3 at 1800. From 4/14 to 5/30 spill alternated between spilling according to the BiOp and spill using the RSW (Removable spillway weir). Spill and the RSW were used for debris removal several times. Spill ended 6/20 0600.

FIGURE F-1

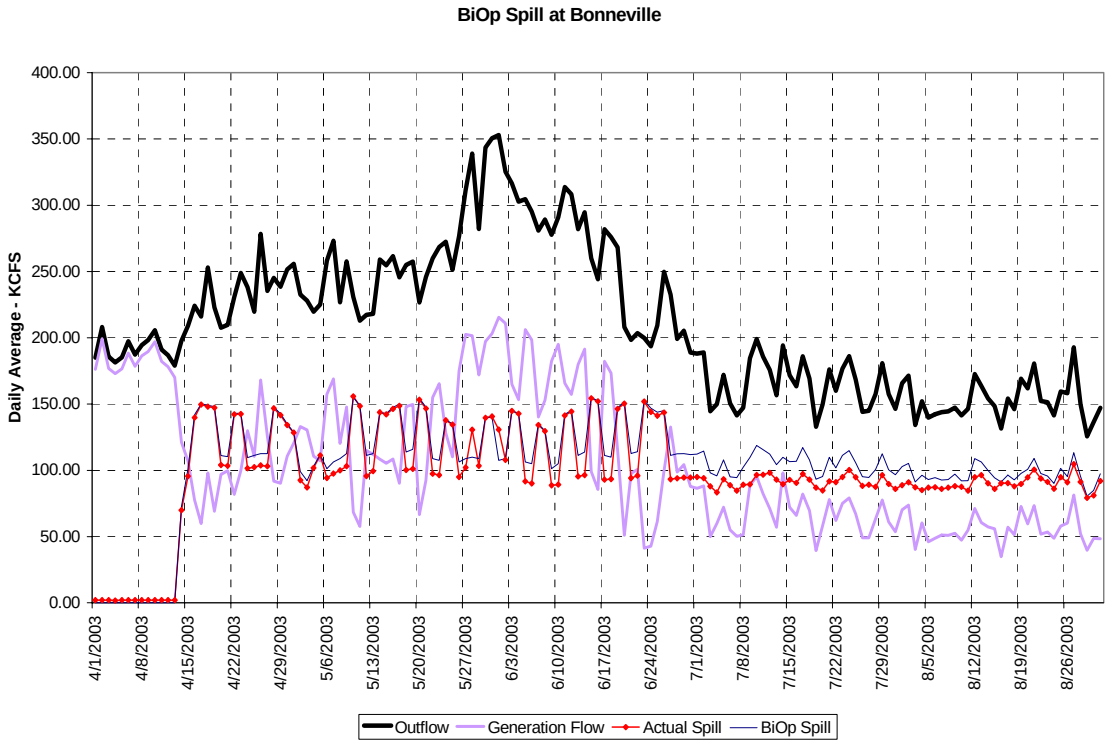

FIGURE F-2

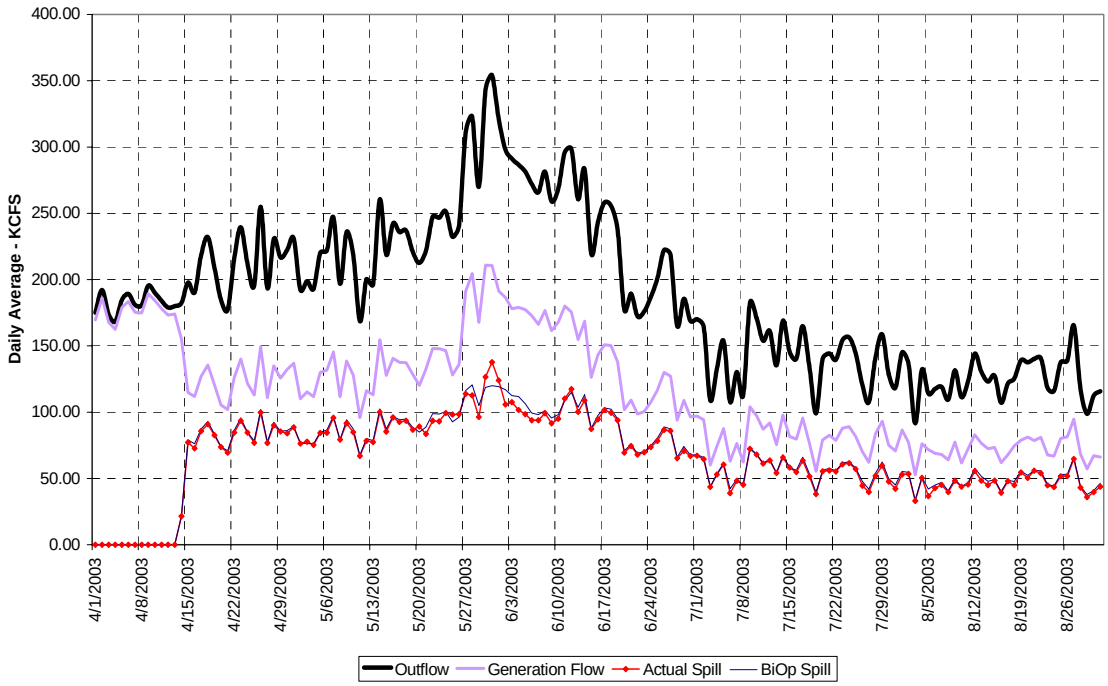

FIGURE F-3

BiOp Spill at John Day

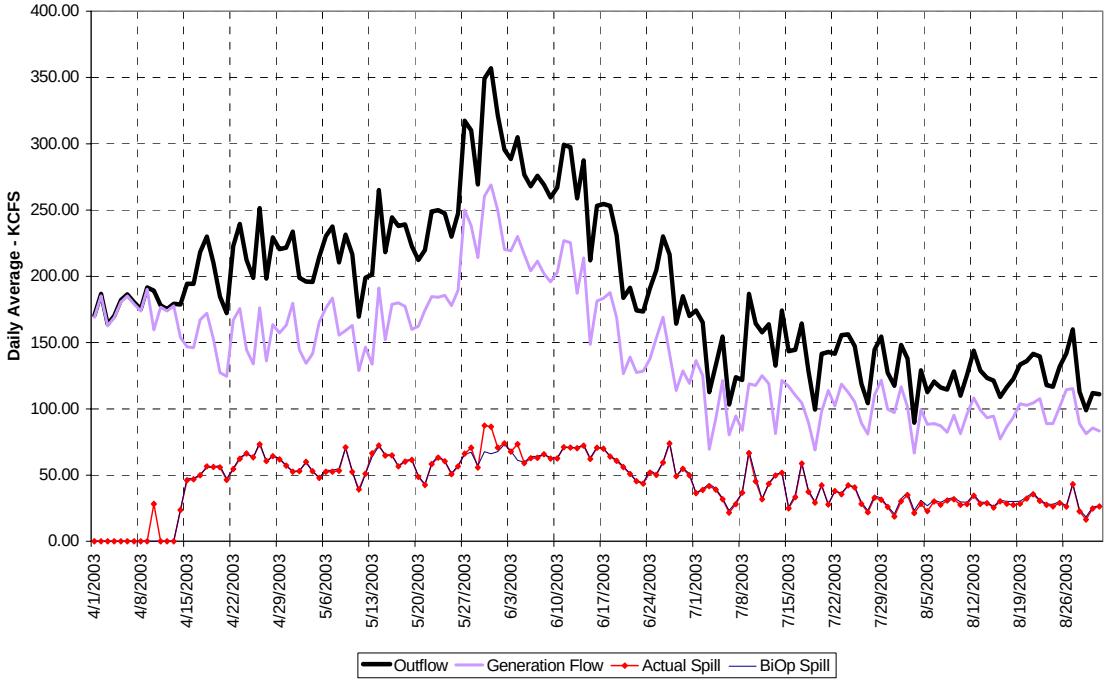

FIGURE F-4

BiOp Spill at McNary

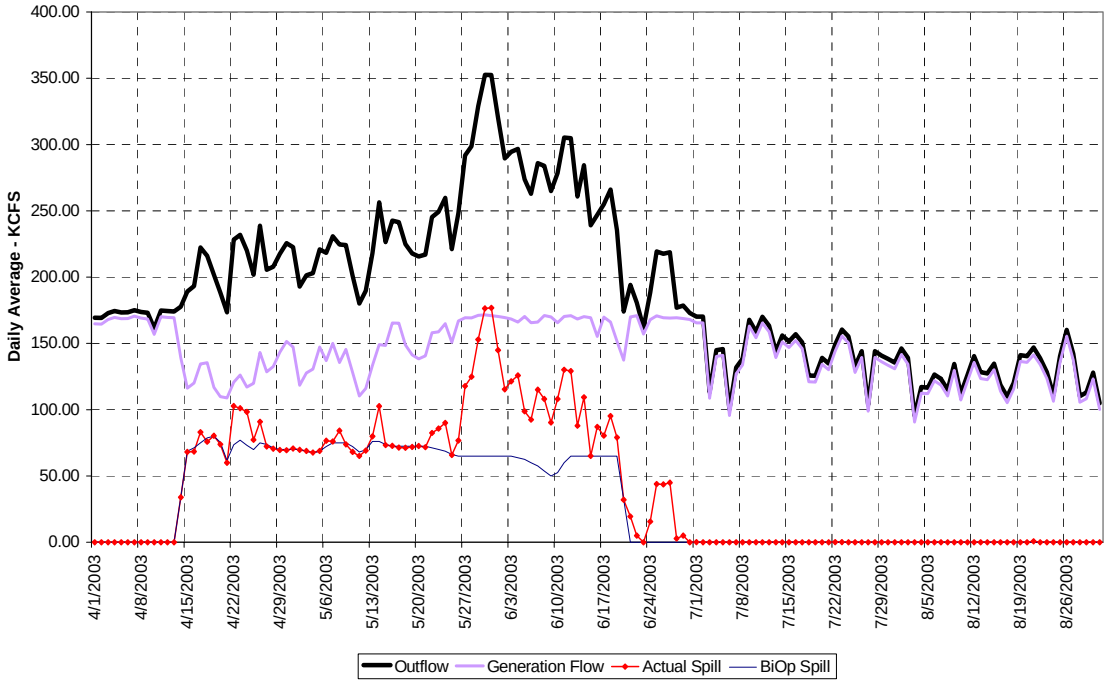

FIGURE F-5

BiOp Spill at Ice Harbor

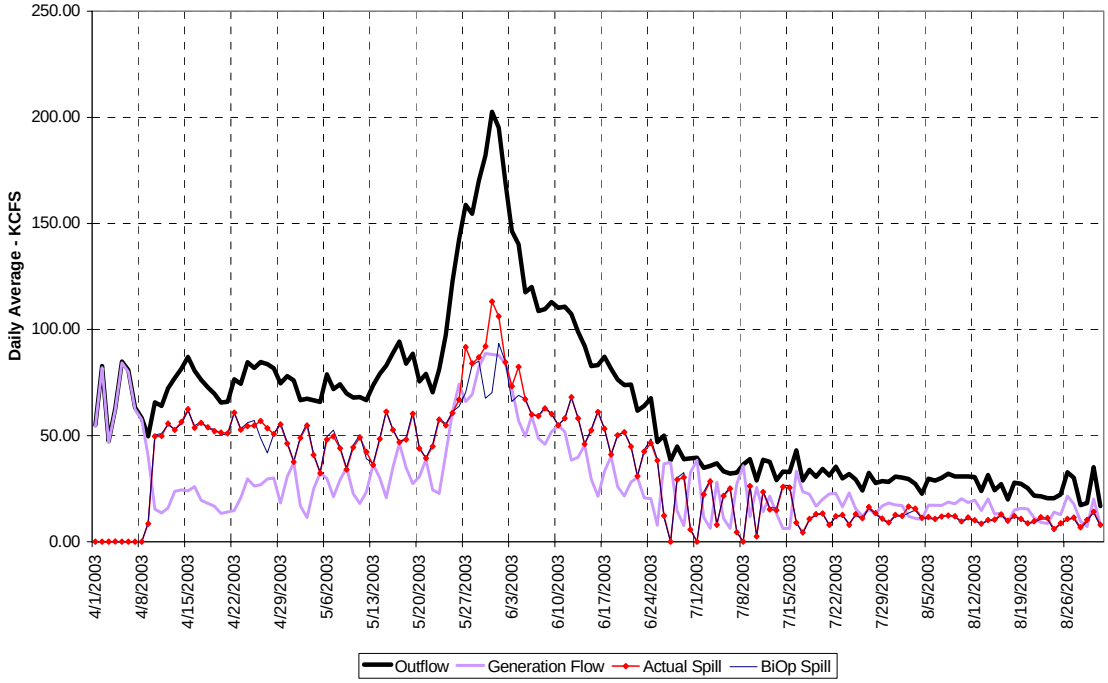

FIGURE F-6

BiOp Spill at Lower Monumental

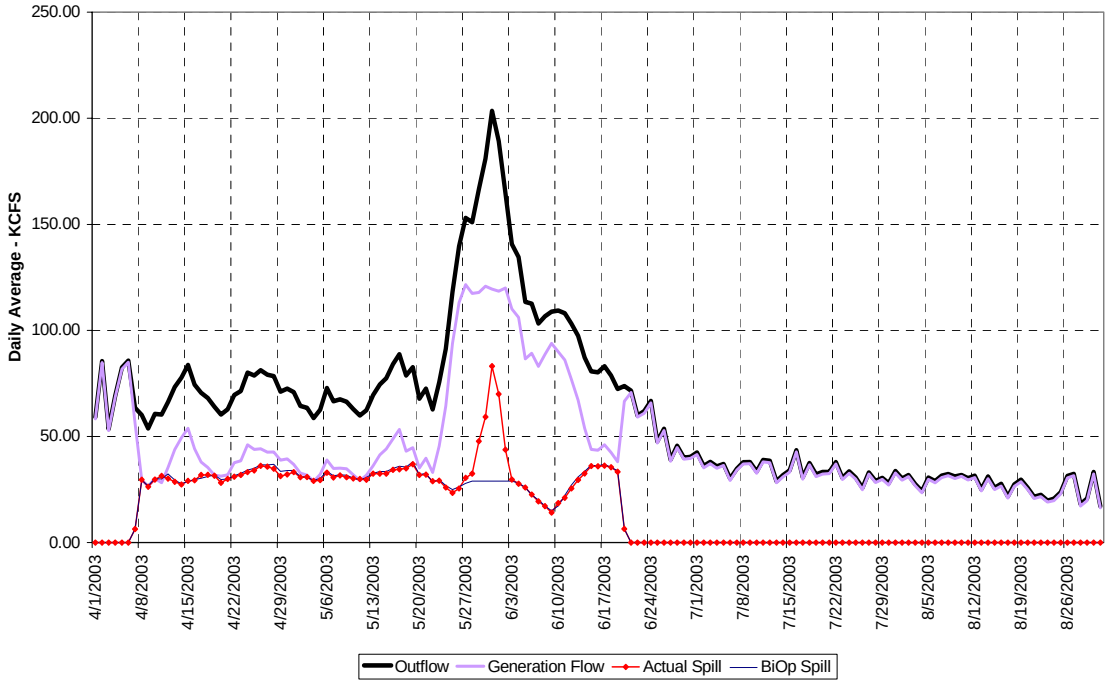

FIGURE F-7

BiOp Spill at Little Goose

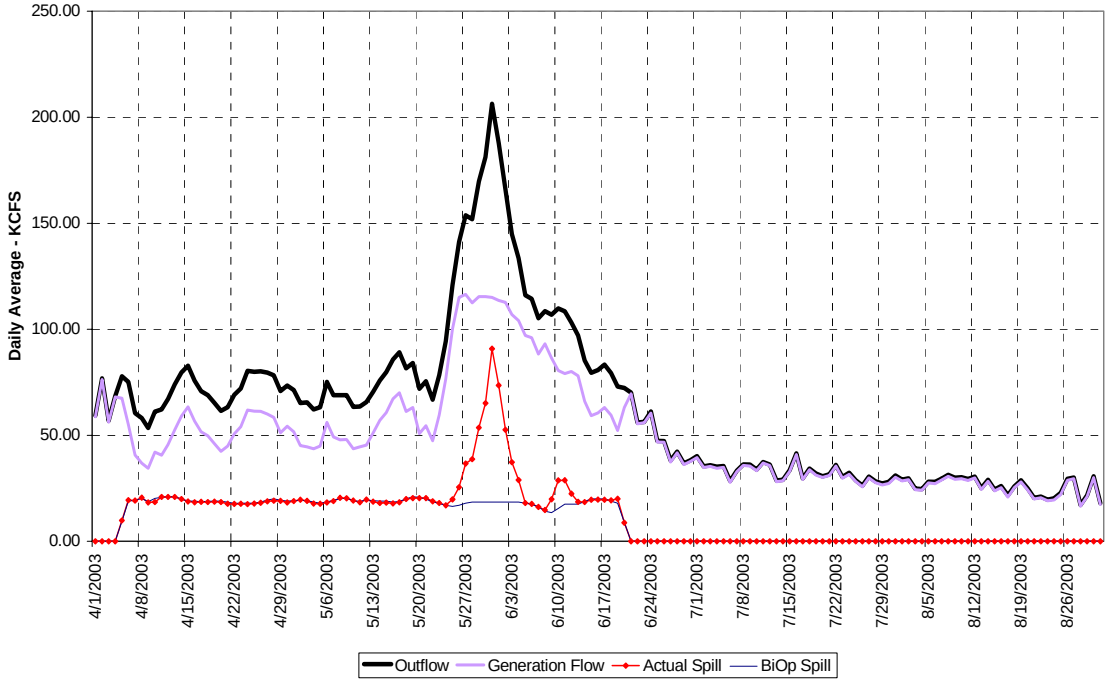

FIGURE F-8

BiOp Spill at Lower Granite

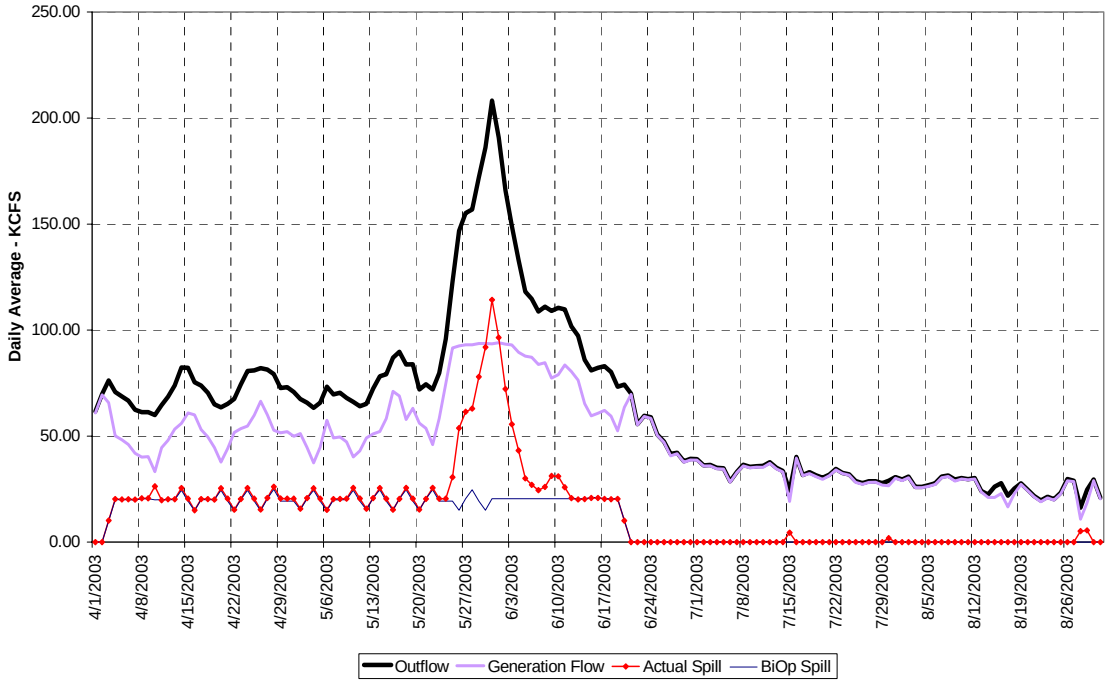

TABLE F-1

BiOp Spill at Bonneville

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
4/1/2003	184.94	176.23	2.05	0.00	5/22/2003	259.82	154.96	97.40	108.75	7/12/2003	175.70	70.99	98.02	112.27
4/2/2003	208.08	199.33	2.06	0.00	5/23/2003	268.42	165.40	96.30	107.50	7/13/2003	156.63	56.99	92.96	104.19
4/3/2003	185.67	176.86	1.95	0.00	5/24/2003	272.43	128.08	137.68	138.13	7/14/2003	194.07	97.93	89.42	109.81
4/4/2003	181.39	172.91	1.79	0.00	5/25/2003	251.29	110.14	134.45	135.00	7/15/2003	171.63	72.13	92.79	106.49
4/5/2003	185.20	176.46	2.04	0.00	5/26/2003	276.63	175.04	94.89	106.25	7/16/2003	163.28	66.05	90.54	106.82
4/6/2003	197.27	188.45	2.07	0.00	5/27/2003	311.19	202.45	102.12	108.75	7/17/2003	186.00	82.08	97.23	117.08
4/7/2003	187.27	178.51	2.04	0.00	5/28/2003	338.90	201.55	130.50	110.00	7/18/2003	169.17	69.63	92.85	107.81
4/8/2003	194.48	186.20	2.01	0.00	5/29/2003	282.04	172.01	103.34	108.75	7/19/2003	132.85	39.32	86.85	93.18
4/9/2003	198.30	189.55	2.06	0.00	5/30/2003	343.43	197.08	139.64	140.00	7/20/2003	149.54	58.06	84.77	95.28
4/10/2003	205.65	196.95	2.01	0.00	5/31/2003	350.46	203.17	140.59	140.00	7/21/2003	176.10	77.83	91.60	109.83
4/11/2003	190.93	182.15	2.05	0.00	6/1/2003	352.87	215.47	130.73	107.50	7/22/2003	159.99	62.20	91.09	101.73
4/12/2003	186.82	178.11	2.00	0.00	6/2/2003	325.31	210.87	107.78	108.75	7/23/2003	176.68	75.00	94.96	111.20
4/13/2003	178.91	170.03	2.07	0.00	6/3/2003	316.36	164.91	144.75	145.00	7/24/2003	186.05	79.18	100.19	114.89
4/14/2003	197.76	121.19	69.91	72.50	6/4/2003	302.59	153.18	142.72	142.71	7/25/2003	168.42	66.93	94.82	105.69
4/15/2003	209.09	106.94	95.44	101.25	6/5/2003	304.47	206.09	91.69	106.25	7/26/2003	143.98	49.13	88.13	95.15
4/16/2003	224.00	77.62	139.66	141.88	6/6/2003	295.15	198.37	90.07	105.00	7/27/2003	144.87	49.17	89.01	94.68
4/17/2003	216.10	59.83	149.58	150.00	6/7/2003	280.92	140.12	134.10	135.00	7/28/2003	157.54	63.35	87.49	100.56
4/18/2003	252.98	97.95	147.98	149.08	6/8/2003	289.20	152.91	129.60	129.58	7/29/2003	180.85	77.62	96.37	112.37
4/19/2003	222.90	69.08	147.20	148.00	6/9/2003	277.76	182.45	88.62	101.25	7/30/2003	157.42	61.03	89.68	100.34
4/20/2003	207.60	96.93	104.00	111.07	6/10/2003	290.88	194.94	89.24	105.00	7/31/2003	146.28	53.62	85.93	96.69
4/21/2003	209.74	99.66	103.39	110.25	6/11/2003	313.71	165.70	141.30	142.29	8/1/2003	165.58	70.14	88.73	102.74
4/22/2003	230.63	81.77	142.16	143.00	6/12/2003	308.20	157.25	144.26	145.00	8/2/2003	171.36	73.77	90.91	105.21
4/23/2003	248.84	99.68	142.44	143.00	6/13/2003	281.93	179.84	95.41	111.25	8/3/2003	134.12	40.23	87.19	91.23
4/24/2003	238.13	129.91	101.51	109.50	6/14/2003	294.56	191.46	96.39	113.75	8/4/2003	152.08	60.33	85.06	96.26
4/25/2003	219.56	110.51	102.34	111.25	6/15/2003	260.03	99.06	154.26	155.00	8/5/2003	139.75	46.11	86.95	93.04
4/26/2003	278.36	168.04	103.63	112.50	6/16/2003	244.12	85.45	151.99	152.29	8/6/2003	142.36	48.72	87.17	94.44
4/27/2003	235.31	125.59	103.03	112.50	6/17/2003	281.78	182.25	92.85	111.25	8/7/2003	143.81	51.15	85.94	92.66
4/28/2003	245.17	91.77	146.70	147.71	6/18/2003	275.86	173.28	93.28	110.00	8/8/2003	144.45	50.83	86.92	93.10
4/29/2003	238.51	90.17	141.63	142.71	6/19/2003	268.08	115.01	146.37	147.29	8/9/2003	147.18	52.40	88.07	97.13
4/30/2003	251.58	110.73	134.17	135.00	6/20/2003	208.01	51.02	150.30	151.34	8/10/2003	141.43	47.19	87.54	92.12
5/1/2003	255.63	120.49	128.43	128.50	6/21/2003	198.36	97.65	94.05	112.62	8/11/2003	146.25	54.88	84.67	92.24
5/2/2003	232.48	133.05	92.50	99.00	6/22/2003	203.38	100.68	95.88	113.95	8/12/2003	172.57	71.11	94.77	108.80
5/3/2003	227.88	130.48	87.05	92.25	6/23/2003	199.82	41.22	151.90	152.71	8/13/2003	163.60	60.59	96.29	106.16
5/4/2003	219.61	110.73	101.83	103.13	6/24/2003	193.55	42.83	144.03	146.92	8/14/2003	154.25	57.27	90.26	99.95
5/5/2003	225.04	107.13	111.21	111.88	6/25/2003	209.26	61.36	141.17	143.88	8/15/2003	148.51	55.86	85.93	94.37
5/6/2003	258.15	157.27	94.17	101.25	6/26/2003	249.70	99.46	143.58	145.00	8/16/2003	131.59	34.77	90.13	91.21
5/7/2003	273.13	168.94	97.49	106.25	6/27/2003	232.55	132.60	93.25	111.25	8/17/2003	154.09	57.03	90.36	96.36
5/8/2003	226.83	120.19	99.95	108.75	6/28/2003	199.16	98.60	93.85	112.39	8/18/2003	146.10	51.43	87.96	92.75
5/9/2003	257.50	147.75	103.06	112.50	6/29/2003	205.25	104.15	94.42	112.50	8/19/2003	169.06	72.70	89.65	97.57
5/10/2003	230.85	68.37	155.77	155.00	6/30/2003	188.87	87.75	94.45	111.85	8/20/2003	161.80	59.55	94.59	100.74
5/11/2003	212.86	57.66	148.50	148.75	7/1/2003	187.95	86.34	94.91	112.23	8/21/2003	180.59	73.37	100.52	108.97
5/12/2003	217.19	114.88	95.63	111.25	7/2/2003	188.88	88.13	94.04	114.58	8/22/2003	152.36	51.84	93.83	97.67
5/13/2003	217.99	111.93	99.35	112.50	7/3/2003	144.56	49.96	87.90	98.03	8/23/2003	151.30	53.43	91.17	95.56
5/14/2003	258.95	108.45	143.80	143.75	7/4/2003	149.89	59.80	83.38	95.80	8/24/2003	141.42	48.63	86.09	90.05
5/15/2003	254.62	105.38	142.20	142.92	7/5/2003	172.00	72.10	93.21	107.79	8/25/2003	159.40	57.87	94.83	101.53
5/16/2003	261.52	108.50	146.34	147.50	7/6/2003	150.42	54.93	88.77	95.05	8/26/2003	158.13	60.16	90.85	95.31
5/17/2003	245.55	90.19	148.67	150.00	7/7/2003	141.45	50.16	84.60	94.47	8/27/2003	192.65	81.28	104.70	113.21
5/18/2003	254.90	148.03	100.16	113.75	7/8/2003	147.18	51.36	89.12	102.40	8/28/2003	149.93	52.05	91.16	95.55
5/19/2003	257.40	149.59	101.11	115.75	7/9/2003	184.54	88.61	89.28	109.60	8/29/2003	125.48	39.60	79.18	80.48
5/20/2003	226.63	66.59	153.14	154.33	7/10/2003	199.03	95.40	96.56	118.67	8/30/2003	136.27	48.50	81.04	84.73
5/21/2003	245.76	92.44	146.63	147.71	7/11/2003	185.74	82.30	96.70	115.49	8/31/2003	146.96	48.36	91.86	97.38

TABLE F-2

BiOp Spill at The Dalles

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
4/2/2003	192.15	186.19	0.00	0.00	5/23/2003	246.73	147.85	93.04	98.69	7/13/2003	135.29	75.41	54.17	54.12
4/3/2003	173.59	167.82	0.00	0.00	5/24/2003	251.39	146.41	99.33	100.56	7/14/2003	169.00	97.81	65.79	67.60
4/4/2003	168.41	162.51	0.00	0.00	5/25/2003	232.19	128.14	98.21	92.83	7/15/2003	145.56	81.64	58.21	58.23
4/5/2003	184.60	178.95	0.00	0.00	5/26/2003	240.52	136.08	98.54	96.21	7/16/2003	140.29	79.73	54.79	56.12
4/6/2003	189.07	183.47	0.00	0.00	5/27/2003	310.82	191.17	113.75	116.27	7/17/2003	164.91	95.62	63.46	65.97
4/7/2003	180.99	175.28	0.00	0.00	5/28/2003	322.87	204.51	112.71	120.55	7/18/2003	133.83	76.39	51.54	53.53
4/8/2003	180.77	175.00	0.00	0.00	5/29/2003	270.01	167.82	96.42	105.13	7/19/2003	99.26	55.45	38.17	39.47
4/9/2003	195.36	189.46	0.00	0.00	5/30/2003	343.10	210.83	126.63	118.63	7/20/2003	140.12	79.01	55.33	56.05
4/10/2003	189.93	184.28	0.00	0.00	5/31/2003	354.18	210.53	137.75	120.00	7/21/2003	144.27	82.66	55.96	57.71
4/11/2003	183.94	178.10	0.00	0.00	6/1/2003	321.05	191.28	124.00	119.21	7/22/2003	139.62	78.72	55.25	55.85
4/12/2003	178.90	173.25	0.00	0.00	6/2/2003	298.05	186.51	105.83	116.91	7/23/2003	154.33	87.89	60.67	61.73
4/13/2003	179.93	174.03	0.00	0.00	6/3/2003	291.22	178.09	107.54	112.46	7/24/2003	156.35	89.05	61.58	62.54
4/14/2003	182.33	155.18	21.50	21.53	6/4/2003	286.57	178.96	101.71	111.74	7/25/2003	144.52	81.64	57.17	57.81
4/15/2003	197.72	114.88	77.13	79.09	6/5/2003	281.43	177.34	98.50	106.34	7/26/2003	120.50	70.08	44.58	47.85
4/16/2003	190.42	111.87	72.75	76.17	6/6/2003	272.22	172.73	93.96	99.42	7/27/2003	107.53	62.06	39.75	41.99
4/17/2003	218.43	126.97	85.75	87.37	6/7/2003	265.85	166.24	93.96	98.21	7/28/2003	141.63	83.92	52.00	54.08
4/18/2003	232.14	135.55	90.88	92.86	6/8/2003	281.52	176.60	99.21	101.26	7/29/2003	158.64	93.16	59.71	62.38
4/19/2003	208.84	120.65	82.54	83.54	6/9/2003	258.93	161.53	91.63	95.68	7/30/2003	128.72	75.15	47.67	49.89
4/20/2003	184.85	105.38	73.75	73.94	6/10/2003	268.54	167.85	95.10	98.14	7/31/2003	118.45	70.66	42.21	45.12
4/21/2003	177.27	102.08	69.42	70.91	6/11/2003	296.02	180.10	110.21	108.60	8/1/2003	145.09	86.55	52.96	55.32
4/22/2003	216.35	126.13	84.63	86.37	6/12/2003	298.49	175.51	117.33	114.92	8/2/2003	136.44	77.10	53.42	54.48
4/23/2003	239.55	140.10	93.54	95.64	6/13/2003	260.70	154.83	100.17	103.71	8/3/2003	91.63	52.80	33.00	33.66
4/24/2003	211.85	121.50	84.58	84.74	6/14/2003	283.18	168.61	108.92	113.27	8/4/2003	132.20	76.15	50.33	51.00
4/25/2003	195.63	113.00	76.92	78.25	6/15/2003	219.40	126.23	87.33	87.76	8/5/2003	114.10	71.74	36.58	42.16
4/26/2003	254.86	149.38	99.83	101.95	6/16/2003	243.59	143.25	94.63	97.44	8/6/2003	117.50	69.08	42.83	45.15
4/27/2003	193.63	111.00	76.67	77.45	6/17/2003	258.12	150.87	101.67	103.25	8/7/2003	119.14	68.12	45.13	46.90
4/28/2003	230.73	135.02	90.00	92.29	6/18/2003	255.56	150.13	99.54	102.21	8/8/2003	109.45	63.97	39.83	40.67
4/29/2003	216.70	125.63	85.42	85.67	6/19/2003	237.56	137.80	93.92	95.02	8/9/2003	131.46	77.52	48.29	49.57
4/30/2003	222.39	132.32	84.04	86.13	6/20/2003	177.19	101.88	69.42	70.88	8/10/2003	111.34	61.75	43.75	44.02
5/1/2003	231.13	136.84	88.58	89.00	6/21/2003	189.30	109.08	74.50	75.72	8/11/2003	123.43	72.19	45.58	46.68
5/2/2003	192.25	110.08	76.33	76.67	6/22/2003	172.40	98.67	67.96	68.96	8/12/2003	144.19	82.94	55.54	57.68
5/3/2003	198.86	115.23	77.79	76.30	6/23/2003	175.90	100.43	69.75	70.36	8/13/2003	130.62	76.55	48.42	51.73
5/4/2003	193.07	111.71	75.33	76.17	6/24/2003	186.97	107.59	73.67	74.79	8/14/2003	123.17	72.40	45.00	47.86
5/5/2003	220.03	130.05	84.33	84.83	6/25/2003	200.75	116.49	78.29	80.30	8/15/2003	127.38	73.42	48.38	49.04
5/6/2003	222.09	131.75	84.42	86.64	6/26/2003	222.38	129.95	86.58	88.95	8/16/2003	107.11	62.04	39.29	40.21
5/7/2003	246.96	145.50	95.75	97.24	6/27/2003	218.80	127.18	85.92	87.52	8/17/2003	121.56	67.85	48.00	48.63
5/8/2003	196.83	111.65	79.33	78.73	6/28/2003	165.12	93.97	65.25	66.05	8/18/2003	125.39	74.64	44.92	47.66
5/9/2003	235.98	138.56	91.58	94.39	6/29/2003	185.50	108.91	70.75	74.20	8/19/2003	139.09	78.94	54.50	55.64
5/10/2003	218.58	128.03	84.83	87.43	6/30/2003	168.95	96.46	66.96	67.58	8/20/2003	137.60	81.25	50.33	52.19
5/11/2003	168.61	95.88	66.96	67.44	7/1/2003	170.08	97.13	67.17	68.03	8/21/2003	140.09	78.58	55.79	56.04
5/12/2003	200.25	116.17	78.25	80.10	7/2/2003	164.51	94.28	64.58	65.81	8/22/2003	140.75	81.00	54.04	55.78
5/13/2003	196.21	113.10	77.46	78.48	7/3/2003	109.27	60.06	43.63	43.71	8/23/2003	118.43	67.78	44.88	45.51
5/14/2003	260.45	154.55	100.13	102.55	7/4/2003	132.66	74.09	52.92	53.06	8/24/2003	116.05	66.90	43.50	44.37
5/15/2003	218.76	127.65	85.33	87.26	7/5/2003	153.80	87.59	60.38	61.52	8/25/2003	137.56	80.12	51.67	52.90
5/16/2003	242.24	140.55	96.04	96.90	7/6/2003	107.75	62.98	39.00	42.21	8/26/2003	139.05	81.53	51.88	53.15
5/17/2003	235.90	137.52	92.67	94.36	7/7/2003	130.30	76.49	48.29	49.19	8/27/2003	165.29	94.83	64.69	66.06
5/18/2003	236.90	137.50	93.50	94.76	7/8/2003	113.13	62.33	45.21	45.05	8/28/2003	117.08	68.23	43.15	43.99
5/19/2003	220.89	128.37	86.75	88.36	7/9/2003	182.32	104.15	72.33	72.93	8/29/2003	98.83	57.31	35.88	37.88
5/20/2003	212.64	120.26	89.17	85.06	7/10/2003	170.90	97.14	68.04	68.36	8/30/2003	112.45	67.13	39.67	40.76
5/21/2003	221.95	132.57	83.54	88.78	7/11/2003	153.91	87.18	61.33	61.56	8/31/2003	115.86	66.21	43.75	46.33

TABLE F-3

BiOp Spill at John Day

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
4/2/2003	186.68	185.31	0.00	0.00	5/23/2003	249.76	184.05	63.12	64.62	7/13/2003	132.57	81.28	49.67	50.22
4/3/2003	163.97	162.45	0.00	0.00	5/24/2003	247.33	185.47	60.46	60.56	7/14/2003	174.13	121.38	51.75	52.24
4/4/2003	170.12	168.82	0.00	0.00	5/25/2003	229.98	177.82	50.65	51.41	7/15/2003	143.42	117.03	24.85	25.67
4/5/2003	181.94	180.57	0.00	0.00	5/26/2003	247.49	189.47	56.52	57.14	7/16/2003	144.66	110.13	33.30	35.31
4/6/2003	186.28	185.13	0.00	0.00	5/27/2003	317.25	249.96	66.16	65.68	7/17/2003	164.40	104.52	58.67	59.39
4/7/2003	180.39	179.13	0.00	0.00	5/28/2003	310.06	238.14	70.63	67.19	7/18/2003	128.43	89.65	37.33	38.53
4/8/2003	175.18	173.80	0.00	0.00	5/29/2003	269.24	213.99	55.74	57.14	7/19/2003	99.41	68.90	29.21	29.82
4/9/2003	191.56	190.18	0.00	0.00	5/30/2003	349.12	260.41	87.33	67.71	7/20/2003	141.52	97.86	42.22	42.46
4/10/2003	189.14	159.45	28.17	0.00	5/31/2003	356.86	268.88	86.53	66.19	7/21/2003	142.94	113.75	27.82	27.62
4/11/2003	178.00	176.69	0.00	0.00	6/1/2003	321.49	249.72	70.77	67.71	7/22/2003	141.53	102.18	37.96	38.24
4/12/2003	175.20	173.75	0.00	0.00	6/2/2003	295.47	220.17	73.90	73.13	7/23/2003	155.50	118.53	35.52	36.43
4/13/2003	179.26	177.72	0.00	0.00	6/3/2003	288.46	219.39	67.68	68.22	7/24/2003	156.20	112.44	42.22	42.24
4/14/2003	178.70	153.85	23.55	23.75	6/4/2003	304.78	230.08	73.33	61.16	7/25/2003	147.29	105.17	40.73	41.39
4/15/2003	194.30	146.80	46.15	47.50	6/5/2003	276.53	216.34	58.97	59.68	7/26/2003	118.81	89.13	28.23	29.44
4/16/2003	194.23	146.15	46.78	47.50	6/6/2003	267.83	203.95	62.73	63.97	7/27/2003	104.24	80.91	21.95	23.14
4/17/2003	218.23	167.04	49.78	50.25	6/7/2003	275.76	211.45	62.94	64.19	7/28/2003	144.66	110.31	32.90	34.52
4/18/2003	229.88	172.02	56.54	55.50	6/8/2003	268.99	201.87	65.73	65.77	7/29/2003	154.46	121.52	31.42	32.58
4/19/2003	210.14	152.58	56.16	56.27	6/9/2003	259.45	195.65	62.40	62.97	7/30/2003	127.13	99.64	25.98	26.54
4/20/2003	184.67	127.22	55.81	57.11	6/10/2003	266.93	202.99	62.63	62.78	7/31/2003	117.43	97.12	18.79	20.69
4/21/2003	172.17	124.50	46.39	47.29	6/11/2003	299.28	226.94	71.03	71.00	8/1/2003	148.16	116.62	30.23	32.28
4/22/2003	222.72	166.94	54.49	54.99	6/12/2003	297.37	225.33	70.74	70.82	8/2/2003	137.86	101.39	34.93	36.96
4/23/2003	239.42	175.51	62.27	63.18	6/13/2003	258.75	187.16	70.35	70.73	8/3/2003	89.51	66.63	21.35	23.16
4/24/2003	212.25	144.47	66.31	66.37	6/14/2003	287.30	213.84	72.15	73.07	8/4/2003	129.02	99.38	28.20	30.87
4/25/2003	198.69	133.79	63.45	62.88	6/15/2003	211.99	148.62	62.16	62.88	8/5/2003	112.48	88.26	22.75	26.84
4/26/2003	251.43	176.28	73.18	74.74	6/16/2003	253.05	181.21	70.59	70.98	8/6/2003	120.38	88.75	30.09	31.11
4/27/2003	198.27	136.09	60.58	60.01	6/17/2003	254.59	183.40	69.85	70.32	8/7/2003	116.17	87.18	27.68	29.30
4/28/2003	229.28	163.55	64.35	64.23	6/18/2003	253.16	187.70	63.99	64.30	8/8/2003	114.55	82.35	30.80	31.96
4/29/2003	220.45	157.23	61.88	62.89	6/19/2003	230.91	168.76	60.77	61.49	8/9/2003	128.16	95.17	31.72	33.04
4/30/2003	221.69	163.05	57.13	57.19	6/20/2003	183.69	126.38	56.01	56.63	8/10/2003	109.92	81.16	27.52	29.78
5/1/2003	233.70	179.63	52.60	52.78	6/21/2003	191.22	139.08	50.76	51.06	8/11/2003	125.50	96.03	28.01	29.44
5/2/2003	198.88	144.59	52.91	53.18	6/22/2003	174.22	127.46	45.32	45.51	8/12/2003	143.88	108.17	34.30	35.40
5/3/2003	195.97	134.25	60.04	59.40	6/23/2003	173.33	128.46	43.58	44.20	8/13/2003	128.80	99.02	28.23	29.55
5/4/2003	195.72	141.53	52.87	52.78	6/24/2003	190.78	137.62	51.85	53.71	8/14/2003	123.28	93.27	28.80	29.49
5/5/2003	214.42	165.24	47.79	48.19	6/25/2003	204.63	153.35	50.04	50.64	8/15/2003	121.23	94.42	25.44	26.25
5/6/2003	230.19	176.14	52.60	53.47	6/26/2003	230.09	169.06	59.40	60.04	8/16/2003	108.92	77.19	30.20	31.14
5/7/2003	237.57	183.59	52.54	53.66	6/27/2003	216.39	141.30	73.85	75.22	8/17/2003	116.36	86.48	28.34	30.12
5/8/2003	210.39	155.45	53.22	54.83	6/28/2003	164.23	113.78	49.06	49.27	8/18/2003	122.36	93.46	27.51	30.04
5/9/2003	231.29	159.09	70.90	70.23	6/29/2003	184.86	128.60	54.64	55.46	8/19/2003	133.25	103.74	28.28	30.24
5/10/2003	216.57	162.87	52.38	53.29	6/30/2003	170.14	119.21	49.83	51.04	8/20/2003	135.99	102.59	32.21	33.51
5/11/2003	169.56	128.89	39.16	37.25	7/1/2003	174.03	136.36	36.37	36.47	8/21/2003	141.48	104.43	35.45	36.74
5/12/2003	198.90	146.39	50.99	50.89	7/2/2003	165.24	125.06	38.73	39.49	8/22/2003	139.40	107.63	30.43	31.15
5/13/2003	201.28	133.69	66.43	63.72	7/3/2003	112.46	69.37	41.72	43.41	8/23/2003	117.78	88.80	27.51	28.41
5/14/2003	264.95	191.18	72.34	71.94	7/4/2003	133.00	92.73	38.98	39.90	8/24/2003	116.68	88.96	26.27	27.75
5/15/2003	218.22	152.03	64.75	65.51	7/5/2003	154.43	121.22	31.74	32.45	8/25/2003	131.88	101.55	28.97	30.13
5/16/2003	244.41	178.87	64.91	64.72	7/6/2003	103.26	80.37	21.56	23.14	8/26/2003	141.89	114.45	26.14	26.65
5/17/2003	237.89	179.97	56.58	56.88	7/7/2003	123.89	94.67	28.06	29.50	8/27/2003	159.90	115.28	43.16	43.62
5/18/2003	239.03	177.18	60.19	61.09	7/8/2003	121.63	83.71	36.67	36.70	8/28/2003	113.02	88.83	22.60	23.96
5/19/2003	222.68	159.93	61.42	61.88	7/9/2003	186.68	118.85	66.59	68.40	8/29/2003	99.00	81.23	16.53	18.40
5/20/2003	212.34	162.32	48.63	49.37	7/10/2003	164.33	117.67	45.22	49.30	8/30/2003	111.77	85.43	24.83	25.71
5/21/2003	219.75	174.42	42.56	43.10	7/11/2003	157.75	125.02	31.72	31.87	8/31/2003	110.95	83.22	26.28	26.98

TABLE F-4

BiOp Spill at McNary

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
2/Apr/2003	169.23	164.53	0.00	0.00	23/May/2003	249.24	158.75	85.79	70.00	13/Jul/2003	143.99	139.29	0.00	0.00
3/Apr/2003	172.87	168.13	0.04	0.00	24/May/2003	259.69	164.89	90.10	68.75	14/Jul/2003	155.91	151.21	0.00	0.00
4/Apr/2003	174.35	169.65	0.00	0.00	25/May/2003	221.22	150.69	65.84	66.25	15/Jul/2003	151.53	146.83	0.00	0.00
5/Apr/2003	173.38	168.68	0.00	0.00	26/May/2003	248.31	166.87	76.75	65.00	16/Jul/2003	156.88	152.18	0.00	0.00
6/Apr/2003	173.49	168.79	0.00	0.00	27/May/2003	291.86	169.31	117.85	65.00	17/Jul/2003	150.75	146.05	0.00	0.00
7/Apr/2003	175.16	170.46	0.00	0.00	28/May/2003	298.83	169.22	124.90	65.00	18/Jul/2003	125.78	121.08	0.00	0.00
8/Apr/2003	173.71	169.01	0.00	0.00	29/May/2003	328.97	171.29	152.96	65.00	19/Jul/2003	125.55	120.85	0.00	0.00
9/Apr/2003	173.07	168.37	0.00	0.00	30/May/2003	352.55	171.52	176.31	65.00	20/Jul/2003	138.95	134.25	0.00	0.00
10/Apr/2003	161.43	156.73	0.00	0.00	31/May/2003	352.41	170.90	176.78	65.00	21/Jul/2003	134.86	130.11	0.05	0.00
11/Apr/2003	174.74	170.04	0.00	0.00	1/Jun/2003	320.17	170.38	144.93	65.00	22/Jul/2003	149.13	144.24	0.19	0.00
12/Apr/2003	174.33	169.63	0.00	0.00	2/Jun/2003	289.64	169.50	115.44	65.00	23/Jul/2003	160.52	155.65	0.16	0.00
13/Apr/2003	174.13	169.43	0.00	0.00	3/Jun/2003	294.51	168.39	121.45	65.00	24/Jul/2003	155.18	150.48	0.00	0.00
14/Apr/2003	177.72	139.15	33.88	33.75	4/Jun/2003	296.70	166.14	125.87	63.75	25/Jul/2003	132.90	128.17	0.03	0.00
15/Apr/2003	189.07	116.29	68.09	68.75	5/Jun/2003	273.79	170.30	98.78	62.50	26/Jul/2003	144.19	139.42	0.07	0.00
16/Apr/2003	193.27	120.12	68.45	71.25	6/Jun/2003	262.85	165.68	92.48	60.00	27/Jul/2003	103.61	98.91	0.00	0.00
17/Apr/2003	222.26	134.49	83.08	75.00	7/Jun/2003	285.91	166.06	115.15	57.50	28/Jul/2003	144.20	139.50	0.00	0.00
18/Apr/2003	216.00	135.38	75.93	78.75	8/Jun/2003	283.87	171.11	108.07	53.75	29/Jul/2003	140.78	136.08	0.00	0.00
19/Apr/2003	201.88	116.86	80.33	80.00	9/Jun/2003	264.98	169.88	90.40	50.00	30/Jul/2003	138.30	133.60	0.00	0.00
20/Apr/2003	188.42	109.88	73.84	75.42	10/Jun/2003	278.48	165.66	108.12	52.50	31/Jul/2003	135.56	130.86	0.00	0.00
21/Apr/2003	173.53	108.90	59.92	61.69	11/Jun/2003	305.15	170.34	130.13	60.00	1/Aug/2003	146.22	141.52	0.00	0.00
22/Apr/2003	228.14	120.70	102.75	73.53	12/Jun/2003	304.78	170.93	129.07	65.00	2/Aug/2003	139.01	134.31	0.00	0.00
23/Apr/2003	231.88	126.10	101.08	77.00	13/Jun/2003	260.88	168.30	87.86	65.00	3/Aug/2003	95.31	90.61	0.00	0.00
24/Apr/2003	220.08	117.10	98.29	73.11	14/Jun/2003	284.35	170.22	109.44	65.00	4/Aug/2003	117.13	112.43	0.00	0.00
25/Apr/2003	201.80	119.79	77.31	69.83	15/Jun/2003	239.14	169.30	65.15	65.00	5/Aug/2003	116.74	112.04	0.00	0.00
26/Apr/2003	238.79	143.20	90.90	75.00	16/Jun/2003	246.98	155.25	87.04	65.00	6/Aug/2003	126.49	121.79	0.00	0.00
27/Apr/2003	205.55	128.60	72.27	73.75	17/Jun/2003	255.01	169.81	80.48	65.00	7/Aug/2003	123.23	118.53	0.00	0.00
28/Apr/2003	207.87	132.64	70.51	71.25	18/Jun/2003	265.99	166.04	95.24	65.00	8/Aug/2003	115.13	110.43	0.00	0.00
29/Apr/2003	217.47	143.27	69.51	70.00	19/Jun/2003	235.46	151.77	78.99	65.00	9/Aug/2003	134.37	129.67	0.00	0.00
30/Apr/2003	225.60	151.46	69.45	70.00	20/Jun/2003	174.09	137.38	32.00	32.50	10/Aug/2003	112.13	107.43	0.00	0.00
1/May/2003	222.62	147.25	70.65	70.00	21/Jun/2003	194.07	169.88	19.50	0.00	11/Aug/2003	126.29	121.59	0.00	0.00
2/May/2003	192.78	118.43	69.65	69.95	22/Jun/2003	180.69	171.00	4.98	0.00	12/Aug/2003	140.44	135.74	0.00	0.00
3/May/2003	201.24	127.75	68.79	68.70	23/Jun/2003	161.75	157.05	0.00	0.00	13/Aug/2003	128.26	123.56	0.00	0.00
4/May/2003	202.94	130.58	67.67	67.50	24/Jun/2003	188.26	167.93	15.63	0.00	14/Aug/2003	127.45	122.75	0.00	0.00
5/May/2003	220.93	147.38	68.85	68.75	25/Jun/2003	219.39	170.78	43.93	0.00	15/Aug/2003	134.77	130.07	0.00	0.00
6/May/2003	218.33	137.00	76.63	72.12	26/Jun/2003	217.63	169.34	43.63	0.00	16/Aug/2003	118.73	114.03	0.00	0.00
7/May/2003	230.82	150.07	76.06	75.00	27/Jun/2003	218.78	169.13	44.95	0.00	17/Aug/2003	109.98	105.28	0.00	0.00
8/May/2003	224.57	135.62	84.25	75.00	28/Jun/2003	176.88	169.32	2.87	0.00	18/Aug/2003	120.13	115.43	0.00	0.00
9/May/2003	224.13	145.52	73.92	75.00	29/Jun/2003	178.60	168.81	5.08	0.00	19/Aug/2003	141.14	136.44	0.00	0.00
10/May/2003	201.03	128.16	68.17	72.18	30/Jun/2003	172.92	168.13	0.00	0.00	20/Aug/2003	140.39	135.69	0.00	0.00
11/May/2003	180.15	110.31	65.15	68.21	1/Jul/2003	170.28	165.52	0.08	0.00	21/Aug/2003	146.83	141.36	0.77	0.00
12/May/2003	189.75	115.91	69.13	69.79	2/Jul/2003	170.18	165.48	0.00	0.00	22/Aug/2003	138.87	134.12	0.05	0.00
13/May/2003	217.98	133.40	79.90	76.00	3/Jul/2003	113.30	108.60	0.00	0.00	23/Aug/2003	128.24	123.54	0.00	0.00
14/May/2003	256.46	149.10	102.66	76.00	4/Jul/2003	144.88	140.18	0.00	0.00	24/Aug/2003	111.10	106.40	0.00	0.00
15/May/2003	226.44	148.40	73.33	73.75	5/Jul/2003	145.74	141.04	0.00	0.00	25/Aug/2003	140.47	135.79	0.00	0.00
16/May/2003	242.73	165.35	72.67	72.50	6/Jul/2003	100.35	95.65	0.00	0.00	26/Aug/2003	160.17	155.47	0.00	0.00
17/May/2003	241.35	165.25	71.41	72.50	7/Jul/2003	131.82	127.12	0.00	0.00	27/Aug/2003	142.12	137.42	0.00	0.00
18/May/2003	224.90	148.95	71.24	72.50	8/Jul/2003	138.42	133.72	0.00	0.00	28/Aug/2003	110.30	105.60	0.00	0.00
19/May/2003	217.84	141.30	71.83	72.50	9/Jul/2003	167.73	163.03	0.00	0.00	29/Aug/2003	112.89	108.19	0.00	0.00
20/May/2003	215.60	138.28	72.61	72.50	10/Jul/2003	158.98	154.28	0.00	0.00	30/Aug/2003	127.95	123.25	0.00	0.00
21/May/2003	217.00	140.61	71.67	72.50	11/Jul/2003	170.11	165.41	0.00	0.00	31/Aug/2003	104.98	100.28	0.00	0.00

TABLE F-5

BiOp Spill at Ice Harbor

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
2/Apr/2003	82.78	82.09	0.00	0.00	23/May/2003	81.29	22.75	57.56	58.41	13/Jul/2003	28.97	13.17	14.86	15.93
3/Apr/2003	47.33	46.68	0.03	0.00	24/May/2003	97.48	41.39	54.82	55.43	14/Jul/2003	33.03	6.25	25.85	26.65
4/Apr/2003	62.62	62.00	0.05	0.00	25/May/2003	122.65	61.11	60.68	61.33	15/Jul/2003	32.84	6.29	25.50	26.45
5/Apr/2003	84.91	84.29	0.00	0.00	26/May/2003	142.43	74.26	66.97	63.78	16/Jul/2003	43.08	33.19	8.95	9.11
6/Apr/2003	80.87	80.10	0.00	0.00	27/May/2003	158.73	66.05	91.75	70.21	17/Jul/2003	28.91	23.63	4.34	3.73
7/Apr/2003	63.25	62.37	0.00	0.00	28/May/2003	154.50	69.30	84.05	83.42	18/Jul/2003	33.83	22.35	10.73	10.28
8/Apr/2003	58.27	57.52	0.00	0.00	29/May/2003	170.28	82.36	86.92	85.10	19/Jul/2003	30.61	16.70	12.99	12.64
9/Apr/2003	49.66	40.29	8.50	9.09	30/May/2003	182.00	88.72	92.10	67.65	20/Jul/2003	34.29	19.96	13.34	13.13
10/Apr/2003	65.66	15.29	49.67	50.26	31/May/2003	202.56	88.35	113.15	70.21	21/Jul/2003	31.26	22.56	7.96	7.77
11/Apr/2003	64.01	13.58	49.81	50.97	1/Jun/2003	195.12	87.85	106.23	93.47	22/Jul/2003	35.36	22.76	11.97	11.73
12/Apr/2003	72.31	15.89	55.68	55.16	2/Jun/2003	169.20	83.70	84.58	84.60	23/Jul/2003	29.92	16.43	12.61	12.42
13/Apr/2003	77.14	23.71	52.73	52.95	3/Jun/2003	146.40	72.20	73.26	66.16	24/Jul/2003	31.83	23.04	7.98	8.59
14/Apr/2003	81.65	24.41	56.44	55.45	4/Jun/2003	140.13	57.00	82.38	68.96	25/Jul/2003	29.32	15.50	13.00	12.56
15/Apr/2003	87.08	23.98	62.46	61.66	5/Jun/2003	117.60	49.66	67.13	67.25	26/Jul/2003	24.13	12.20	11.12	10.69
16/Apr/2003	80.66	26.05	53.73	54.71	6/Jun/2003	119.95	59.27	59.93	59.97	27/Jul/2003	32.38	15.20	16.37	15.77
17/Apr/2003	76.32	19.50	56.00	56.56	7/Jun/2003	108.72	48.65	59.19	59.24	28/Jul/2003	27.60	13.38	13.38	12.93
18/Apr/2003	72.78	18.11	53.93	53.19	8/Jun/2003	109.61	45.92	62.83	63.50	29/Jul/2003	28.51	16.91	10.92	10.39
19/Apr/2003	69.73	16.75	52.05	53.13	9/Jun/2003	112.93	51.93	60.19	60.15	30/Jul/2003	28.21	18.30	9.03	8.72
20/Apr/2003	65.55	13.32	51.45	50.72	10/Jun/2003	110.26	54.75	54.82	55.13	31/Jul/2003	30.65	17.33	12.59	12.17
21/Apr/2003	65.95	14.08	51.13	50.28	11/Jun/2003	110.78	51.78	58.12	57.95	1/Aug/2003	30.29	16.97	12.21	11.95
22/Apr/2003	76.48	14.69	60.86	60.89	12/Jun/2003	107.31	38.51	68.06	67.84	2/Aug/2003	29.49	11.99	16.58	13.47
23/Apr/2003	74.47	20.73	52.76	53.28	13/Jun/2003	98.88	39.80	58.20	58.42	3/Aug/2003	27.33	11.03	15.54	14.93
24/Apr/2003	84.58	29.60	54.48	56.07	14/Jun/2003	92.27	45.56	45.95	46.13	4/Aug/2003	22.64	10.56	11.25	10.84
25/Apr/2003	81.89	26.23	54.73	57.18	15/Jun/2003	82.73	29.50	52.40	52.99	5/Aug/2003	29.73	17.18	11.59	10.88
26/Apr/2003	84.68	26.86	56.87	48.80	16/Jun/2003	83.25	21.40	61.09	61.67	6/Aug/2003	28.77	17.17	10.78	10.63
27/Apr/2003	83.70	29.53	53.47	41.85	17/Jun/2003	87.18	33.16	53.26	53.05	7/Aug/2003	30.03	17.09	11.94	11.75
28/Apr/2003	81.69	29.94	50.75	50.76	18/Jun/2003	81.48	40.14	41.10	40.74	8/Aug/2003	32.00	18.73	12.35	12.49
29/Apr/2003	74.58	18.25	55.28	55.90	19/Jun/2003	76.44	25.95	50.19	50.10	9/Aug/2003	30.77	17.86	11.97	11.79
30/Apr/2003	78.04	30.57	46.28	46.87	20/Jun/2003	73.78	21.59	51.66	51.87	10/Aug/2003	30.75	20.32	9.55	9.13
1/May/2003	76.01	37.32	37.63	38.00	21/Jun/2003	74.02	28.22	44.87	44.83	11/Aug/2003	30.78	18.47	11.45	10.89
2/May/2003	66.73	16.95	48.91	49.39	22/Jun/2003	61.73	30.21	30.85	30.86	12/Aug/2003	30.38	19.56	10.07	9.85
3/May/2003	67.34	11.38	54.77	55.89	23/Jun/2003	63.94	20.66	42.53	43.29	13/Aug/2003	23.86	14.64	8.47	8.19
4/May/2003	66.62	24.88	40.87	41.23	24/Jun/2003	67.65	20.27	46.45	48.48	14/Aug/2003	31.38	20.25	10.19	10.00
5/May/2003	65.81	32.46	32.28	32.91	25/Jun/2003	46.98	7.80	38.25	38.88	15/Aug/2003	24.20	13.02	10.43	9.83
6/May/2003	78.83	29.83	48.14	49.45	26/Jun/2003	50.06	36.74	12.25	11.28	16/Aug/2003	27.11	13.40	12.90	12.48
7/May/2003	71.97	21.18	49.66	52.60	27/Jun/2003	38.20	37.33	0.00	0.00	17/Aug/2003	19.84	9.10	9.93	9.50
8/May/2003	74.14	29.09	44.06	44.44	28/Jun/2003	44.84	14.48	29.30	30.05	18/Aug/2003	27.87	14.93	12.19	11.90
9/May/2003	69.90	34.89	34.02	34.95	29/Jun/2003	38.93	7.56	30.32	32.55	19/Aug/2003	27.31	15.78	10.72	10.58
10/May/2003	67.91	22.53	44.51	45.57	30/Jun/2003	39.25	32.61	5.76	5.92	20/Aug/2003	25.21	15.50	8.70	8.59
11/May/2003	68.15	17.98	49.16	50.40	1/Jul/2003	39.58	38.51	0.00	0.00	21/Aug/2003	21.73	11.30	9.68	9.07
12/May/2003	66.73	23.52	42.35	39.06	2/Jul/2003	34.84	11.51	22.27	23.32	22/Aug/2003	21.36	9.17	11.51	10.71
13/May/2003	73.70	36.47	36.16	36.85	3/Jul/2003	35.68	6.31	28.43	29.30	23/Aug/2003	20.51	8.61	11.15	10.63
14/May/2003	79.20	29.94	48.38	48.92	4/Jul/2003	36.98	28.00	7.99	8.15	24/Aug/2003	20.46	13.95	5.98	5.44
15/May/2003	83.07	20.73	61.28	61.60	5/Jul/2003	33.19	10.88	21.58	21.91	25/Aug/2003	22.24	12.70	8.70	8.45
16/May/2003	88.90	35.15	52.70	52.90	6/Jul/2003	32.15	6.33	25.08	25.78	26/Aug/2003	32.79	21.49	10.72	10.25
17/May/2003	94.28	46.35	46.88	47.14	7/Jul/2003	32.57	27.35	4.48	4.65	27/Aug/2003	30.19	17.88	11.34	11.13
18/May/2003	83.97	34.87	48.11	48.88	8/Jul/2003	36.46	35.77	0.00	0.00	28/Aug/2003	17.25	9.70	6.77	5.94
19/May/2003	88.55	27.40	60.33	61.32	9/Jul/2003	38.88	11.81	26.20	26.56	29/Aug/2003	18.23	7.13	10.29	9.64
20/May/2003	75.52	30.68	43.89	44.17	10/Jul/2003	28.87	25.61	2.51	2.58	30/Aug/2003	35.17	20.14	14.15	13.74
21/May/2003	79.10	38.61	39.36	39.55	11/Jul/2003	38.53	14.13	23.41	24.12	31/Aug/2003	16.81	8.10	7.99	7.35

TABLE F-6

BiOp Spill at Lower Monumental

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
2/Apr/2003	85.57	84.84	0.00	0.00	23/May/2003	75.60	45.56	29.14	29.59	13/Jul/2003	28.92	28.20	0.00	0.00
3/Apr/2003	53.51	52.79	0.00	0.00	24/May/2003	91.23	64.37	25.95	26.86	14/Jul/2003	31.75	30.96	0.00	0.00
4/Apr/2003	69.13	68.53	0.00	0.00	25/May/2003	118.08	93.83	23.48	25.00	15/Jul/2003	34.01	33.16	0.00	0.00
5/Apr/2003	82.50	81.77	0.00	0.00	26/May/2003	139.68	113.14	25.52	26.25	16/Jul/2003	43.52	42.73	0.00	0.00
6/Apr/2003	85.71	84.98	0.00	0.00	27/May/2003	152.97	121.64	30.48	27.92	17/Jul/2003	30.78	29.93	0.00	0.00
7/Apr/2003	63.55	56.26	6.39	6.35	28/May/2003	150.91	117.42	32.45	29.00	18/Jul/2003	37.53	36.68	0.00	0.00
8/Apr/2003	60.13	29.53	29.63	29.38	29/May/2003	166.58	117.81	47.79	29.00	19/Jul/2003	32.13	31.09	0.00	0.00
9/Apr/2003	53.82	26.57	26.32	26.79	30/May/2003	180.88	120.84	59.20	29.00	20/Jul/2003	33.28	32.31	0.00	0.00
10/Apr/2003	60.65	30.15	29.70	30.13	31/May/2003	203.45	119.43	83.16	29.00	21/Jul/2003	33.31	32.52	0.00	0.00
11/Apr/2003	60.33	28.16	31.38	29.94	1/Jun/2003	189.25	118.45	69.96	29.00	22/Jul/2003	37.90	37.05	0.00	0.00
12/Apr/2003	66.21	35.30	30.12	32.41	2/Jun/2003	164.61	120.02	43.75	29.00	23/Jul/2003	30.49	29.70	0.00	0.00
13/Apr/2003	73.24	43.88	28.63	29.49	3/Jun/2003	140.67	110.16	29.73	29.00	24/Jul/2003	33.55	32.64	0.00	0.00
14/Apr/2003	77.79	49.40	27.36	27.66	4/Jun/2003	134.58	106.12	27.75	28.08	25/Jul/2003	30.63	29.85	0.00	0.00
15/Apr/2003	83.71	53.88	29.10	28.83	5/Jun/2003	113.46	86.62	25.99	25.92	26/Jul/2003	25.73	24.88	0.00	0.00
16/Apr/2003	74.48	44.16	29.39	29.61	6/Jun/2003	112.55	89.18	22.65	22.50	27/Jul/2003	32.99	32.27	0.00	0.00
17/Apr/2003	70.59	37.92	31.81	30.32	7/Jun/2003	103.23	83.03	19.40	20.00	28/Jul/2003	29.12	28.27	0.00	0.00
18/Apr/2003	68.10	35.33	31.91	31.14	8/Jun/2003	106.67	88.68	17.15	17.29	29/Jul/2003	30.54	29.75	0.00	0.00
19/Apr/2003	64.03	31.75	31.49	31.86	9/Jun/2003	108.78	93.87	14.13	15.00	30/Jul/2003	28.02	27.11	0.00	0.00
20/Apr/2003	60.30	31.35	28.16	29.67	10/Jun/2003	109.36	89.96	18.60	17.29	31/Jul/2003	33.71	32.86	0.00	0.00
21/Apr/2003	62.78	31.97	30.01	30.02	11/Jun/2003	108.09	86.10	21.13	22.29	1/Aug/2003	30.13	29.40	0.00	0.00
22/Apr/2003	69.48	37.63	31.02	31.47	12/Jun/2003	103.15	76.92	25.50	27.08	2/Aug/2003	31.86	31.01	0.00	0.00
23/Apr/2003	71.43	38.60	31.90	32.56	13/Jun/2003	97.40	67.14	29.53	30.92	3/Aug/2003	27.54	26.75	0.00	0.00
24/Apr/2003	80.07	46.05	33.16	34.15	14/Jun/2003	87.15	53.85	32.58	33.59	4/Aug/2003	24.25	23.46	0.00	0.00
25/Apr/2003	78.70	43.96	33.96	34.96	15/Jun/2003	80.72	43.94	36.08	36.45	5/Aug/2003	30.63	29.78	0.00	0.00
26/Apr/2003	81.23	44.25	36.19	36.67	16/Jun/2003	80.28	43.45	35.93	36.15	6/Aug/2003	29.03	28.18	0.00	0.00
27/Apr/2003	79.13	42.55	35.79	36.64	17/Jun/2003	83.10	46.11	36.21	36.93	7/Aug/2003	31.50	30.65	0.00	0.00
28/Apr/2003	78.48	42.70	34.81	36.88	18/Jun/2003	78.70	42.46	35.50	35.32	8/Aug/2003	32.33	31.48	0.00	0.00
29/Apr/2003	71.11	38.79	31.32	33.55	19/Jun/2003	72.39	38.13	33.34	33.88	9/Aug/2003	31.13	30.15	0.00	0.00
30/Apr/2003	72.61	39.48	32.16	33.94	20/Jun/2003	73.77	66.60	6.44	6.57	10/Aug/2003	31.90	31.23	0.00	0.00
1/May/2003	70.90	36.78	33.19	33.97	21/Jun/2003	71.61	70.76	0.00	0.00	11/Aug/2003	30.30	29.51	0.00	0.00
2/May/2003	64.40	32.73	30.81	31.09	22/Jun/2003	59.84	59.11	0.00	0.00	12/Aug/2003	31.49	30.58	0.00	0.00
3/May/2003	63.49	31.72	30.85	30.91	23/Jun/2003	61.93	60.95	0.00	0.00	13/Aug/2003	25.19	24.34	0.00	0.00
4/May/2003	58.74	28.80	29.08	29.37	24/Jun/2003	66.78	65.86	0.00	0.00	14/Aug/2003	31.15	30.11	0.00	0.00
5/May/2003	62.60	32.13	29.43	30.20	25/Jun/2003	47.70	46.85	0.00	0.00	15/Aug/2003	25.78	24.93	0.00	0.00
6/May/2003	72.81	38.96	32.93	33.54	26/Jun/2003	53.61	52.76	0.00	0.00	16/Aug/2003	27.62	26.70	0.00	0.00
7/May/2003	66.59	34.90	30.71	31.49	27/Jun/2003	39.11	38.32	0.00	0.00	17/Aug/2003	21.73	20.95	0.00	0.00
8/May/2003	67.50	35.08	31.64	31.99	28/Jun/2003	45.67	44.82	0.00	0.00	18/Aug/2003	27.37	26.45	0.00	0.00
9/May/2003	66.43	34.84	30.80	31.77	29/Jun/2003	40.07	39.28	0.00	0.00	19/Aug/2003	29.60	28.63	0.00	0.00
10/May/2003	62.89	31.93	30.24	30.44	30/Jun/2003	40.40	39.67	0.00	0.00	20/Aug/2003	25.78	25.00	0.00	0.00
11/May/2003	59.83	29.13	29.98	29.41	1/Jul/2003	42.51	41.54	0.00	0.00	21/Aug/2003	21.58	20.73	0.00	0.00
12/May/2003	62.40	31.76	29.59	30.69	2/Jul/2003	36.15	35.24	0.00	0.00	22/Aug/2003	22.44	21.65	0.00	0.00
13/May/2003	69.51	36.20	32.53	32.63	3/Jul/2003	38.05	37.26	0.00	0.00	23/Aug/2003	19.81	19.03	0.00	0.00
14/May/2003	74.52	41.36	32.44	33.43	4/Jul/2003	35.90	34.99	0.00	0.00	24/Aug/2003	20.65	19.80	0.00	0.00
15/May/2003	77.48	44.13	32.52	33.49	5/Jul/2003	37.08	36.30	0.00	0.00	25/Aug/2003	23.73	22.88	0.00	0.00
16/May/2003	84.10	48.86	34.26	34.91	6/Jul/2003	30.14	29.29	0.00	0.00	26/Aug/2003	31.45	30.54	0.00	0.00
17/May/2003	88.74	53.35	34.55	35.96	7/Jul/2003	34.82	34.15	0.00	0.00	27/Aug/2003	32.37	31.52	0.00	0.00
18/May/2003	78.75	43.05	34.98	35.65	8/Jul/2003	37.85	37.06	0.00	0.00	28/Aug/2003	18.05	17.20	0.00	0.00
19/May/2003	82.65	44.78	36.91	38.00	9/Jul/2003	37.92	37.20	0.00	0.00	29/Aug/2003	20.73	19.75	0.00	0.00
20/May/2003	67.79	35.12	31.88	32.01	10/Jul/2003	33.48	32.69	0.00	0.00	30/Aug/2003	33.29	32.38	0.00	0.00
21/May/2003	72.59	39.70	32.04	32.61	11/Jul/2003	38.90	38.05	0.00	0.00	31/Aug/2003	17.13	16.34	0.00	0.00

TABLE F-7

BiOp Spill at Little Goose

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
2/Apr/2003	76.83	76.30	0.00	0.00	23/May/2003	78.36	59.55	18.04	17.90	13/Jul/2003	28.68	28.10	0.00	0.00
3/Apr/2003	56.80	56.21	0.00	0.00	24/May/2003	94.28	76.56	17.02	17.00	14/Jul/2003	29.03	28.54	0.00	0.00
4/Apr/2003	68.48	68.08	0.00	0.00	25/May/2003	120.76	100.12	19.81	16.50	15/Jul/2003	33.53	32.89	0.00	0.00
5/Apr/2003	77.84	67.46	9.85	9.50	26/May/2003	141.20	115.01	25.54	17.00	16/Jul/2003	41.45	40.92	0.00	0.00
6/Apr/2003	75.12	55.16	19.40	19.00	27/May/2003	153.77	116.38	36.67	18.00	17/Jul/2003	29.72	29.14	0.00	0.00
7/Apr/2003	60.51	40.73	19.21	19.40	28/May/2003	151.93	112.49	38.73	18.50	18/Jul/2003	34.30	33.72	0.00	0.00
8/Apr/2003	58.20	36.89	20.58	20.25	29/May/2003	169.75	115.46	53.63	18.50	19/Jul/2003	31.95	31.26	0.00	0.00
9/Apr/2003	53.40	34.41	18.38	18.68	30/May/2003	181.18	115.38	65.13	18.50	20/Jul/2003	30.70	30.12	0.00	0.00
10/Apr/2003	61.11	42.03	18.48	20.26	31/May/2003	206.38	114.98	90.80	18.50	21/Jul/2003	31.57	31.03	0.00	0.00
11/Apr/2003	62.15	40.60	20.95	20.78	1/Jun/2003	187.71	113.52	73.53	18.50	22/Jul/2003	36.08	35.51	0.00	0.00
12/Apr/2003	67.10	45.60	20.92	21.00	2/Jun/2003	165.86	112.63	52.64	18.50	23/Jul/2003	30.34	29.81	0.00	0.00
13/Apr/2003	73.96	52.50	20.92	21.00	3/Jun/2003	144.83	106.90	37.34	18.50	24/Jul/2003	32.30	31.55	0.00	0.00
14/Apr/2003	79.62	59.06	19.96	19.94	4/Jun/2003	133.49	104.10	28.88	18.50	25/Jul/2003	28.82	28.25	0.00	0.00
15/Apr/2003	82.81	63.40	18.76	19.00	5/Jun/2003	116.01	97.10	18.06	18.00	26/Jul/2003	26.33	25.70	0.00	0.00
16/Apr/2003	75.77	56.73	18.46	19.00	6/Jun/2003	114.33	96.03	17.64	17.50	27/Jul/2003	30.48	29.85	0.00	0.00
17/Apr/2003	70.81	51.64	18.58	18.70	7/Jun/2003	105.19	88.30	16.18	16.25	28/Jul/2003	28.31	27.68	0.00	0.00
18/Apr/2003	68.87	49.78	18.50	18.85	8/Jun/2003	108.58	93.17	14.76	14.25	29/Jul/2003	27.25	26.56	0.00	0.00
19/Apr/2003	65.32	46.06	18.66	19.00	9/Jun/2003	106.86	86.45	19.88	13.50	30/Jul/2003	27.99	27.30	0.00	0.00
20/Apr/2003	61.53	42.45	18.55	19.00	10/Jun/2003	109.83	80.52	28.71	15.50	31/Jul/2003	31.03	30.27	0.00	0.00
21/Apr/2003	63.30	44.90	17.75	18.41	11/Jun/2003	108.46	79.10	28.80	17.50	1/Aug/2003	29.07	28.42	0.00	0.00
22/Apr/2003	69.06	50.65	17.65	17.85	12/Jun/2003	103.13	80.06	22.49	17.50	2/Aug/2003	29.70	29.12	0.00	0.00
23/Apr/2003	72.13	54.00	17.70	18.00	13/Jun/2003	97.10	78.01	18.57	17.50	3/Aug/2003	24.86	24.34	0.00	0.00
24/Apr/2003	80.32	61.90	17.55	18.00	14/Jun/2003	85.26	66.05	18.55	18.75	4/Aug/2003	24.61	24.09	0.00	0.00
25/Apr/2003	79.87	61.37	17.85	18.00	15/Jun/2003	79.42	59.27	19.62	20.00	5/Aug/2003	28.11	27.54	0.00	0.00
26/Apr/2003	80.13	61.29	18.19	18.50	16/Jun/2003	80.83	60.56	19.68	20.00	6/Aug/2003	28.04	27.23	0.00	0.00
27/Apr/2003	79.58	60.01	18.92	19.50	17/Jun/2003	83.30	63.05	19.60	20.00	7/Aug/2003	29.52	28.94	0.00	0.00
28/Apr/2003	78.34	58.46	19.18	20.00	18/Jun/2003	79.40	59.47	19.29	19.00	8/Aug/2003	31.32	30.73	0.00	0.00
29/Apr/2003	70.88	51.20	19.02	19.42	19/Jun/2003	72.99	52.27	20.07	18.00	9/Aug/2003	29.98	29.29	0.00	0.00
30/Apr/2003	73.42	54.33	18.38	19.00	20/Jun/2003	72.34	63.04	8.78	9.00	10/Aug/2003	30.20	29.57	0.00	0.00
1/May/2003	71.31	51.62	18.98	19.25	21/Jun/2003	70.18	69.59	0.00	0.00	11/Aug/2003	29.32	28.69	0.00	0.00
2/May/2003	65.20	45.17	19.58	19.32	22/Jun/2003	55.97	55.39	0.00	0.00	12/Aug/2003	30.50	29.93	0.00	0.00
3/May/2003	65.45	44.56	19.03	19.25	23/Jun/2003	56.31	55.91	0.00	0.00	13/Aug/2003	25.07	24.53	0.00	0.00
4/May/2003	62.15	43.70	17.79	18.50	24/Jun/2003	61.21	60.50	0.00	0.00	14/Aug/2003	29.03	28.39	0.00	0.00
5/May/2003	63.27	44.93	17.75	18.00	25/Jun/2003	47.36	46.84	0.00	0.00	15/Aug/2003	24.47	23.83	0.00	0.00
6/May/2003	75.20	56.07	18.36	18.50	26/Jun/2003	47.26	46.68	0.00	0.00	16/Aug/2003	26.06	25.37	0.00	0.00
7/May/2003	68.88	49.22	19.00	19.40	27/Jun/2003	38.09	37.43	0.00	0.00	17/Aug/2003	21.65	20.89	0.00	0.00
8/May/2003	68.89	47.90	20.46	20.04	28/Jun/2003	42.32	41.80	0.00	0.00	18/Aug/2003	25.82	25.36	0.00	0.00
9/May/2003	68.89	48.03	20.27	20.41	29/Jun/2003	36.80	36.15	0.00	0.00	19/Aug/2003	28.85	27.98	0.00	0.00
10/May/2003	63.48	43.65	19.25	19.27	30/Jun/2003	38.23	37.71	0.00	0.00	20/Aug/2003	24.95	24.20	0.00	0.00
11/May/2003	63.53	44.52	18.46	18.76	1/Jul/2003	40.20	39.48	0.00	0.00	21/Aug/2003	20.52	19.95	0.00	0.00
12/May/2003	65.67	45.39	19.69	19.54	2/Jul/2003	35.39	34.77	0.00	0.00	22/Aug/2003	21.13	20.55	0.00	0.00
13/May/2003	70.48	51.10	18.67	19.26	3/Jul/2003	35.91	35.35	0.00	0.00	23/Aug/2003	19.73	19.17	0.00	0.00
14/May/2003	75.86	57.10	18.12	19.00	4/Jul/2003	35.15	34.44	0.00	0.00	24/Aug/2003	20.19	19.50	0.00	0.00
15/May/2003	79.85	60.69	18.27	19.00	5/Jul/2003	35.50	34.93	0.00	0.00	25/Aug/2003	22.83	22.14	0.00	0.00
16/May/2003	85.75	67.18	17.91	18.50	6/Jul/2003	28.43	27.85	0.00	0.00	26/Aug/2003	29.40	28.83	0.00	0.00
17/May/2003	89.14	70.04	18.45	18.75	7/Jul/2003	33.33	32.80	0.00	0.00	27/Aug/2003	30.10	29.52	0.00	0.00
18/May/2003	81.63	61.18	19.92	20.00	8/Jul/2003	36.23	35.83	0.00	0.00	28/Aug/2003	17.17	16.60	0.00	0.00
19/May/2003	84.13	63.08	20.40	21.00	9/Jul/2003	36.10	35.56	0.00	0.00	29/Aug/2003	21.62	21.10	0.00	0.00
20/May/2003	71.95	50.85	20.40	20.79	10/Jul/2003	33.82	33.31	0.00	0.00	30/Aug/2003	30.69	30.06	0.00	0.00
21/May/2003	75.53	54.51	20.44	19.99	11/Jul/2003	37.36	36.91	0.00	0.00	31/Aug/2003	17.99	17.36	0.00	0.00

TABLE F-8

BiOp Spill at Lower Granite

Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill	Date	Outflow	Generation Flow	Actual Spill	BiOp Spill
2/Apr/2003	69.78	69.48	0.00	0.00	23/May/2003	79.69	58.34	20.48	19.30	13/Jul/2003	35.08	34.57	0.00	0.00
3/Apr/2003	76.27	65.73	10.17	10.00	24/May/2003	95.74	74.70	20.50	19.30	14/Jul/2003	33.53	33.08	0.00	0.00
4/Apr/2003	70.76	50.09	20.35	20.00	25/May/2003	122.65	91.50	30.64	19.30	15/Jul/2003	24.31	19.22	4.48	0.00
5/Apr/2003	68.75	48.26	20.12	20.00	26/May/2003	146.73	92.48	53.81	15.07	16/Jul/2003	40.18	39.60	0.00	0.00
6/Apr/2003	66.74	46.09	20.24	20.00	27/May/2003	155.15	93.06	61.43	20.50	17/Jul/2003	31.68	31.31	0.00	0.00
7/Apr/2003	62.45	41.87	20.01	19.89	28/May/2003	156.83	93.05	62.99	24.72	18/Jul/2003	33.02	32.30	0.00	0.00
8/Apr/2003	61.32	40.05	20.68	20.50	29/May/2003	172.13	93.66	77.90	19.30	19/Jul/2003	31.46	30.88	0.00	0.00
9/Apr/2003	61.31	40.35	20.65	20.50	30/May/2003	186.15	93.71	91.92	15.07	20/Jul/2003	30.29	29.64	0.00	0.00
10/Apr/2003	59.97	33.18	26.27	19.95	31/May/2003	208.20	93.49	114.28	20.50	21/Jul/2003	31.75	31.31	0.00	0.00
11/Apr/2003	64.62	44.56	19.75	20.00	1/Jun/2003	190.77	94.00	96.47	20.50	22/Jul/2003	34.57	34.05	0.00	0.00
12/Apr/2003	68.53	48.01	20.21	20.00	2/Jun/2003	165.92	93.30	72.19	20.50	23/Jul/2003	32.69	32.32	0.00	0.00
13/Apr/2003	73.92	53.33	20.20	20.00	3/Jun/2003	149.06	92.94	55.60	20.50	24/Jul/2003	31.99	31.55	0.00	0.00
14/Apr/2003	82.28	56.03	25.51	24.47	4/Jun/2003	133.00	89.45	43.24	20.50	25/Jul/2003	28.80	28.22	0.00	0.00
15/Apr/2003	82.24	60.93	20.51	19.30	5/Jun/2003	118.14	87.67	30.10	20.50	26/Jul/2003	27.81	27.30	0.00	0.00
16/Apr/2003	75.42	60.08	15.05	14.82	6/Jun/2003	114.71	87.12	27.01	20.50	27/Jul/2003	28.73	28.21	0.00	0.00
17/Apr/2003	73.80	53.02	20.34	20.00	7/Jun/2003	108.70	83.77	24.48	20.50	28/Jul/2003	28.75	28.31	0.00	0.00
18/Apr/2003	70.42	49.56	20.35	20.00	8/Jun/2003	111.03	84.62	26.03	20.50	29/Jul/2003	27.78	26.92	0.00	0.00
19/Apr/2003	65.00	44.68	20.02	20.00	9/Jun/2003	109.03	77.38	31.27	20.50	30/Jul/2003	28.87	26.56	1.87	0.00
20/Apr/2003	63.56	37.73	25.40	24.47	10/Jun/2003	110.52	78.91	31.04	20.50	31/Jul/2003	30.70	30.18	0.00	0.00
21/Apr/2003	65.20	44.25	20.51	19.30	11/Jun/2003	109.68	83.54	25.83	20.50	1/Aug/2003	29.49	28.98	0.00	0.00
22/Apr/2003	67.60	51.69	15.33	14.82	12/Jun/2003	101.75	80.48	20.76	20.50	2/Aug/2003	30.90	30.32	0.00	0.00
23/Apr/2003	74.32	53.49	20.35	20.00	13/Jun/2003	97.28	76.40	20.15	20.50	3/Aug/2003	26.00	25.70	0.00	0.00
24/Apr/2003	80.72	54.77	25.51	24.47	14/Jun/2003	86.00	65.31	20.30	20.50	4/Aug/2003	26.00	25.70	0.00	0.00
25/Apr/2003	80.99	59.90	20.51	19.30	15/Jun/2003	80.94	59.62	20.81	21.00	5/Aug/2003	26.86	26.35	0.00	0.00
26/Apr/2003	82.08	66.43	15.36	14.82	16/Jun/2003	82.21	60.76	20.80	21.00	6/Aug/2003	27.75	27.23	0.00	0.00
27/Apr/2003	81.34	60.02	20.82	20.50	17/Jun/2003	82.98	62.08	20.38	20.50	7/Aug/2003	30.87	30.36	0.00	0.00
28/Apr/2003	79.31	52.79	26.14	24.97	18/Jun/2003	80.23	59.45	20.26	20.50	8/Aug/2003	31.40	30.96	0.00	0.00
29/Apr/2003	72.65	51.53	20.55	19.30	19/Jun/2003	73.26	52.45	20.42	20.50	9/Aug/2003	29.49	28.84	0.00	0.00
30/Apr/2003	73.11	52.10	20.50	19.30	20/Jun/2003	74.24	63.57	10.09	10.25	10/Aug/2003	30.20	29.76	0.00	0.00
1/May/2003	70.78	49.96	20.51	19.30	21/Jun/2003	70.09	69.72	0.00	0.00	11/Aug/2003	29.75	29.31	0.00	0.00
2/May/2003	67.50	51.23	15.76	15.32	22/Jun/2003	55.69	55.32	0.00	0.00	12/Aug/2003	30.20	29.76	0.00	0.00
3/May/2003	65.75	44.65	20.74	20.50	23/Jun/2003	59.61	59.24	0.00	0.00	13/Aug/2003	24.03	23.66	0.00	0.00
4/May/2003	63.37	37.40	25.45	24.47	24/Jun/2003	58.92	58.34	0.00	0.00	14/Aug/2003	22.43	21.11	0.00	0.00
5/May/2003	65.73	44.72	20.50	19.30	25/Jun/2003	50.77	50.40	0.00	0.00	15/Aug/2003	26.10	21.12	0.00	0.00
6/May/2003	73.26	57.48	15.20	14.82	26/Jun/2003	47.43	47.06	0.00	0.00	16/Aug/2003	27.78	22.94	0.00	0.00
7/May/2003	69.73	49.12	20.31	19.98	27/Jun/2003	41.60	40.73	0.00	0.00	17/Aug/2003	21.92	16.65	0.00	0.00
8/May/2003	70.41	49.59	20.38	19.99	28/Jun/2003	42.10	41.66	0.00	0.00	18/Aug/2003	25.23	22.85	0.00	0.00
9/May/2003	68.03	47.26	20.47	20.00	29/Jun/2003	38.15	37.64	0.00	0.00	19/Aug/2003	27.76	27.32	0.00	0.00
10/May/2003	66.12	40.14	25.60	24.47	30/Jun/2003	39.28	38.77	0.00	0.00	20/Aug/2003	24.65	24.28	0.00	0.00
11/May/2003	64.04	43.06	20.54	19.30	1/Jul/2003	39.12	38.68	0.00	0.00	21/Aug/2003	21.75	21.31	0.00	0.00
12/May/2003	65.22	49.15	15.70	15.32	2/Jul/2003	36.18	35.88	0.00	0.00	22/Aug/2003	19.72	19.06	0.00	0.00
13/May/2003	72.38	51.05	20.75	20.75	3/Jul/2003	36.46	35.95	0.00	0.00	23/Aug/2003	21.42	20.84	0.00	0.00
14/May/2003	78.20	52.18	25.52	24.72	4/Jul/2003	35.08	34.64	0.00	0.00	24/Aug/2003	20.20	19.75	0.00	0.00
15/May/2003	79.15	58.24	20.53	19.30	5/Jul/2003	34.78	34.48	0.00	0.00	25/Aug/2003	23.23	22.72	0.00	0.00
16/May/2003	87.00	71.17	15.31	15.07	6/Jul/2003	28.75	28.23	0.00	0.00	26/Aug/2003	29.80	28.86	0.00	0.00
17/May/2003	89.72	68.92	20.44	20.50	7/Jul/2003	33.08	32.70	0.00	0.00	27/Aug/2003	28.93	28.55	0.00	0.00
18/May/2003	83.78	57.77	25.58	24.72	8/Jul/2003	36.55	35.97	0.00	0.00	28/Aug/2003	16.27	10.80	5.17	0.00
19/May/2003	83.85	63.09	20.48	19.30	9/Jul/2003	35.49	35.05	0.00	0.00	29/Aug/2003	24.72	18.58	5.56	0.00
20/May/2003	72.06	56.09	15.43	15.07	10/Jul/2003	35.75	35.31	0.00	0.00	30/Aug/2003	29.51	29.00	0.00	0.00
21/May/2003	74.43	53.73	20.41	20.50	11/Jul/2003	35.95	35.30	0.00	0.00	31/Aug/2003	21.03	20.38	0.00	0.00