

WASKADA LOWER AMARANTH UNIT NO. 1

WATERFLOOD PROGRESS REPORT

January 1, through December 31, 2012

Penn West Exploration

Prepared by:

Siros Mahmody, P.Eng.

Senior Waterflood Exploitation Engineer

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	3
UNIT HISTORY	4
DISCUSSION	6
<ul style="list-style-type: none">• Production Performance• Voidage Replacement Ratio Calculation• Corrosion and Scale Prevention Program	
SUMMARY & RECOMMENDATIONS	7
TABLES	10
<ul style="list-style-type: none">• Table 1 - Rates History• Table 2 – Pressure Survey	
APPENDICES	
<ul style="list-style-type: none">• Appendix A – Area Map• Appendix B – Production and Injection History plot• Appendix C – Voidage Replacement Ratio VRR• Appendix D – Production and Injection Profiles (Individual wells)	

INTRODUCTION

The WASKADA LOWER AMARANTH UNIT NO.1 pressure maintenance project commenced water injection into the Lower Amaranth designed and in accordance with Manitoba Energy and Mines Approval No. PM 58.

PRESSURE MAINTENANCE: Governed by Board Order No. PM 58

Unit Information:

UNITIZED ZONE: Lower Amaranth

Original Unit, Jan.1, 1983 Board Order; Voluntary

First Enlargement, July. 1, 1983

POOL: Waskada Lower Amaranth A (03 29A)

This report documents the performance of the Waskada Lower Amaranth pressure maintenance project for the period of January 1 to December 31, 2012.

Lower Amaranth Unit # 1 is part of main Waskada. The Waskada field is situated on the northeast rim of the Williston Basin in southern Manitoba. It comprises a large portion of Township 1 and 2, Ranges 25 and 26 (W1PM).

The Waskada Fields produce light density crude (approximately 36° API), predominantly from the Lower Amaranth formation. The interlaminated, shallow marine to subtidal succession of sandstones, siltstones, and shale progressively onlaps the Mississippian unconformity surface from basin center, up dip to the north and eastern basin limits in Saskatchewan and Manitoba. The fine grained reservoir rock has a complex reservoir characterization with 13 to 16 % porosity and permeability on the order of 0.5 to 15 md. The lower Amaranth, the oldest Mesozoic unit is a clastic red bed sequence lying directly on the Paleozoic erosional surface. It consists of a series of dolomitic siltstones and sandstones interbedded with argillaceous siltstones and shales. The section is usually subdivided into a lower sandy unit and an overlying shale unit. The lower sequence is the oil production zone. The bulk of pay is founded in the laminated sandstone/siltstone facies.

The Lower Amaranth has been classified into four general lithological types:

1. Interbedded shale/siltstone/sandstone by grain size, color and texture
2. Siltstone – This lithology occurs in distinct intervals up to two or three meters in thickness. It is generally light green in color and dolomitic.
3. Laminated sandstone – This occurs in distinct sandy intervals with a wide range of grain sizes and primary sedimentary structures.
4. Massive sandstone – This lithology occurs in thin intervals and usually associated with the laminated sandstones facies. Beds are usually light grey to reddish grey in color and coarse to medium – grained.

UNIT HISTORY

Waskada Lower Amaranth Unit #1 (Unit History)

CPA Pretty Well ID	Date Well Spudded	On Prod YYYY/MM/DD	Org Operator Name	Ground Elevation (m)	TVD (m)
100/09-23-001-26W1/00	7/3/1982	8/1/1982	Omega Hydcbns Ltd	465.9	953
102/10-23-001-26W1/00	5/30/1983	6/1/1983	Omega Hydcbns Ltd	465.3	948
100/15-23-001-26W1/00	1/24/1982	2/1/1982	Omega Hydcbns Ltd	464.3	940.5
100/16-23-001-26W1/00	9/20/1981	11/1/1981	Omega Hydcbns Ltd	464.6	965
100/09-24-001-26W1/02	11/28/1981	1/1/1983	NCE Petrofund Corp	468.8	944
100/10-24-001-26W1/00	2/7/1982	3/1/1982	Omega Hydcbns Ltd	466.1	935
100/11-24-001-26W1/00	2/12/1982	3/1/1982	Omega Hydcbns Ltd	465.6	935
100/12-24-001-26W1/02	11/3/1981	2/1/1983	NCE Petrofund Corp	463.9	952
102/13-24-001-26W1/00	9/12/1982		Omega Hydcbns Ltd	465.6	951
100/14-24-001-26W1/00	11/12/1981	2/1/1982	Omega Hydcbns Ltd	465.1	951
100/15-24-001-26W1/00	9/28/1981	10/1/1981	Omega Hydcbns Ltd	466.3	961
102/16-24-001-26W1/00	2/1/1982	2/1/1982	Omega Hydcbns Ltd	468.1	956
100/01-25-001-26W1/02	7/2/1981	5/1/1990	NCE Petrofund Corp	467.3	950
102/01-25-001-26W1/00	9/12/1982	1/1/1983	Omega Hydcbns Ltd	467.2	947
100/02-25-001-26W1/02	8/22/1981	2/1/1983	Omega Hydcbns Ltd	466.1	950
100/03-25-001-26W1/02	7/14/1981	12/1/1982	Omega Hydcbns Ltd	467	955
100/04-25-001-26W1/02	8/17/1981	11/1/1982	NCE Petrofund Corp	466.6	963
100/05-25-001-26W1/02	8/27/1981	10/1/1981	NCE Petrofund Corp	466.9	953
100/06-25-001-26W1/00	1/17/1982	2/1/1982	Omega Hydcbns Ltd	468.1	936
100/07-25-001-26W1/00	3/1/1982	6/1/1982	Omega Hydcbns Ltd	465.7	937
102/08-25-001-26W1/00	1/11/1982	2/1/1982	Omega Hydcbns Ltd	468.4	945

100/09-25-001-26W1/00	1/4/1982	2/1/1982	Omega Hydcbns Ltd	467	934
102/09-25-001-26W1/00	9/17/1994	10/1/1994	Omega Hydcbns Ltd	466.1	905.5
100/10-25-001-26W1/00	5/14/1982	6/1/1982	Omega Hydcbns Ltd	468.9	938
100/11-25-001-26W1/00	5/19/1982	6/1/1982	Omega Hydcbns Ltd	469.2	940
100/12-25-001-26W1/00	5/25/1982	6/1/1982	Omega Hydcbns Ltd	466.8	946
100/13-25-001-26W1/00	7/29/1982	10/1/1982	Omega Hydcbns Ltd	465.5	960
100/14-25-001-26W1/00	8/4/1982	12/1/1982	Omega Hydcbns Ltd	466.7	936
100/15-25-001-26W1/00	8/9/1982	11/1/1982	Omega Hydcbns Ltd	466.8	948
100/16-25-001-26W1/00	8/13/1982	10/1/1982	Omega Hydcbns Ltd	467.9	955
1B0/16-25-001-26W1/00	10/23/1997	11/1/1997	NCE Rsrcs Grp Inc	469.7	929
100/01-26-001-26W1/02	9/14/1981	2/1/1982	NCE Petrofund Corp	466.1	960
100/02-26-001-26W1/00	11/17/1981	2/1/1982	Omega Hydcbns Ltd	463.1	952
100/07-26-001-26W1/00	7/7/1982	10/1/1982	Omega Hydcbns Ltd	463.6	949
100/08-26-001-26W1/00	10/28/1981	1/1/1982	Omega Hydcbns Ltd	465.4	948

Waskada Lower Amaranth Unit #1
Production & Injection History

CPA Pretty Well ID	First Prod YYYY/M M	On Inject. YYYY/MM/ DD	Last Prod. YYYY/M M	Cumulative OIL Prod. (m3)	Cumulative WTR Prod. (m3)	Last Inject. YYYY/M M
100/09-23-001-26W1/00	1982/08		1990/12	10673	32946	
102/10-23-001-26W1/00	1983/06		1992/11	8665	16440	
100/15-23-001-26W1/00	1982/02	10/1/1983	1983/09	2958	790	2004/05
100/16-23-001-26W1/00	1981/11		2012/10	49531	44721	
100/09-24-001-26W1/02	1983/01		2011/08	13547	18353	
100/10-24-001-26W1/00	1982/03		2012/10	5137	1651	
100/11-24-001-26W1/00	1982/03		1995/10	5111	740	
100/12-24-001-26W1/02	1983/02		2008/05	24643	23213	
102/13-24-001-26W1/00		2/1/1983				2006/11
100/14-24-001-26W1/00	1982/02		2012/04	14321	10382	
100/15-24-001-26W1/00	1981/10	2/1/1983	1983/02	3403	431	2006/11
102/16-24-001-26W1/00	1982/02		2002/05	12749	18034	
100/01-25-001-26W1/02	1990/05		1990/11	0	395	
102/01-25-001-26W1/00	1983/01		1990/12	3357	15964	
100/02-25-001-26W1/02	1983/02		2012/10	31164	5486	
100/03-25-001-26W1/02	1982/12		2012/10	30268	11707	
100/04-25-001-26W1/02	1982/11		2012/09	30692	5174	
100/05-25-001-26W1/02	1981/10	2/1/1983	1983/02	3741	517	2012/09

100/06-25-001-26W1/00	1982/02		2010/11	45230	66022	
100/07-25-001-26W1/00	1982/06	2/1/1983	1983/02	1959	608	2012/05
102/08-25-001-26W1/00	1982/02		1995/09	5790	1685	
100/09-25-001-26W1/00	1982/02		1991/02	4928	6496	
102/09-25-001-26W1/00	1994/10		2012/10	8953	19568	
100/10-25-001-26W1/00	1982/06		2012/10	22159	10240	
100/11-25-001-26W1/00	1982/06		2011/11	22675	23918	
100/12-25-001-26W1/00	1982/06		1992/03	16862	39233	
100/13-25-001-26W1/00	1982/10	12/1/1983	1983/12	344	242	2007/12
100/14-25-001-26W1/00	1982/12		1989/08	439	252	
100/15-25-001-26W1/00	1982/11	12/1/1983	1983/09	467	136	2012/10
100/16-25-001-26W1/00	1982/10		2008/09	3667	1630	
1B0/16-25-001-26W1/00	1997/11		2012/08	1261	206	
100/01-26-001-26W1/02	1982/02		2012/10	32612	28265	
100/02-26-001-26W1/00	1982/02		2011/02	26495	21949	
100/07-26-001-26W1/00	1982/10	1/1/1984	1983/12	2446	306	2012/10
100/08-26-001-26W1/00	1982/01		2012/10	36962	43950	

DISCUSSION

Production Performance

Production Response versus Injection: Since injection began, more or less at the same time and the fact that injection rates fluctuated to some degree amongst the injectors, it is difficult to link any production responses to any specific injector. Water breakthrough in certain producers could not be directly correlated with over injection in associated injectors. Some wells showed decrease in oil rate when injection was ceased in 1988-89.

Voidage Replacement Ratio Calculation

With what could be described as very limited success, the waterflood was not maintained properly and injection rate dropped year after year in most cases. The cumulative VRR in the pool is about 1.14 and, the current monthly VRR is changing every month. Although the CUM VRR is greater than one, this can be misleading, from one hand, as the injection across the pool

is quite variable, and from other hand it is unknown how much of this water lost to Mission Canyon Formation, located just below the Amaranth Formation. Most of the injectors are shut in currently because of formation damage due to fines migration or clay swelling, injection water quality and compatibility with formation water, scale build up or channeling problems (see Appendix C).

To understand the past performance of the Lower Amaranth waterflood, we are doing some reservoir engineering work to come up with potential solutions. One of our plans is to do a pilot program in section 2: The objective of the pilot is to:

1. See if we can continuously inject water into the Lower Amaranth Formation with:-
 - i. Particle size less than 1 micron
 - ii. Total Suspended Solid (TSS) less than 10 ppm
 - iii. Oil less than 10 ppm
2. Inject below the frac pressure
3. Test the simulation model that we have built.

2012 Waskada Lower Amaranth Waterflood Pilot Location

The pilot producer is 102/12-01-02-26W1/00 (the existing horizontal well) and the injectors are two vertical wells; 100/12-01-02-26W1 and 100/11-01-02-26 (converted to injectors). The pilot started late 2012, but because of some technical issues and cold weather the operation suspended, and it was postponed until spring 2013.

Corrosion and Scale Prevention Program

We currently inject ScalCor down all the new horizontal wells. Plus, Penn West will be installing cathodic protection on the wells. Also, the new gathering system is Fiberglass and as such is not susceptible to corrosion.

SUMMARY AND RECOMMENDATIONS

Producers

Current Producing Wells

100/16-23-001-26W1/00
100/10-24-001-26W1/00
100/02-25-001-26W1/02
100/03-25-001-26W1/02
102/09-25-001-26W1/00
100/10-25-001-26W1/00
100/01-26-001-26W1/02 (commingled)
100/08-26-001-26W1/00

Current Suspended Wells

100/09-24-001-26W1/02
100/14-24-001-26W1/00
100/06-25-001-26W1/00
100/11-25-001-26W1/00
100/16-25-001-26W1/00
1B0/16-25-001-26W1/00
100/12-24-001-26W1/02 (commingled)
100/04-25-001-36W1/02 (commingled)
100/02-26-001-26W1/00 (commingled)

Abandoned Wells

100/09-23-001-26W1/00 Since 1991/01
102/10-23-001-26W1/00 Since 1983/07
100/11-24-001-26W1/00 Since 1982/04
102/16-24-001-26W1/00 Since 1982/03
100/01-25-001-26W1/02 Since 1990/06
102/01-25-001-26W1/00 Since 1983/02
102/08-25-001-26W1/00 Since 1982/03
100/09-25-001-26W1/00 Since 1982/03
100/12-25-001-26W1/00 Since 1982/07
100/14-25-001-26W1/00 Since 1983/01

Injectors

Current Injecting Wells

100/15-25-001-26W1/00
100/07-26-001-26W1/00

Current Suspended Injection Wells

100/15-23-001-26W1/00 Since 2004/06
102/13-24-001-26W1/00 Since 2006/12
100/15-24-001-26W1/00 Since 2006/12
100/05-25-001-26W1/02 Since 2012/10
100/07-25-001-26W1/00 Since 2012/06
100/13-25-001-26W1/00 Since 2008/01

Abandoned Wells

None

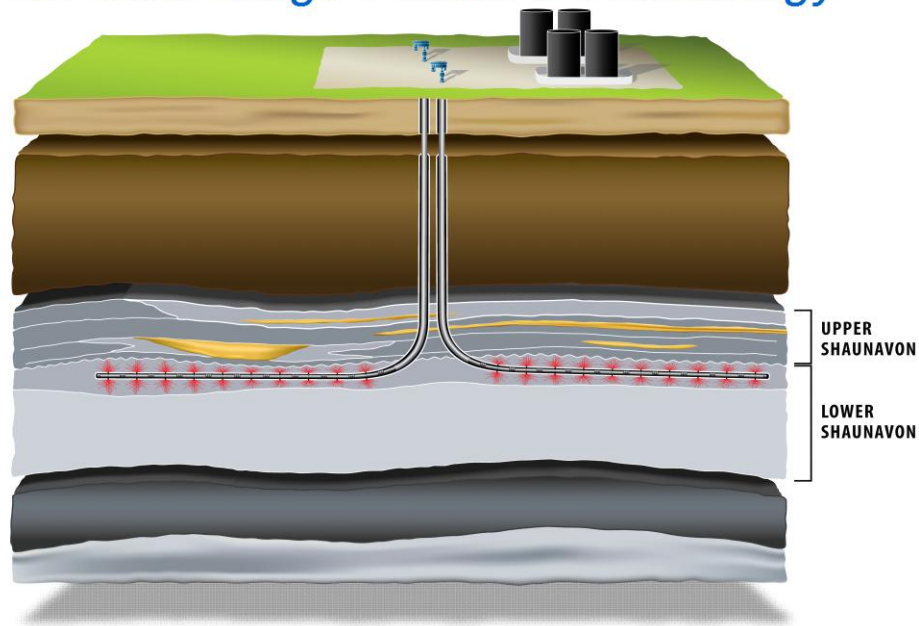
The behavior of a Lower Amaranth Unit 1 producers are indicated by examining the oil rate versus time plots (see Appendix B). Waskada Lower Amaranth Unit 1 exhibited relatively high initial oil productivity (most of the wells drilled in the past were verticals), rapidly declining to flat/low decline rates, with almost no discernible water flood response. This behavior can be explained by drop in the reservoir pressure from initial (approximately 8700 kPag) to above in some wells or below in others bubble point pressure (about 4200 kPag) followed by solution gas breakout which adversely affected the relative permeability to oil. (see Table # 2: Pressure Surveys)

Also, it is believed that fracture stimulation treatments, performed on these wells prior to initiation of water injection, “broke” through into the higher productivity Mississippian zone and that majority of injected water to date has entered this zone. This is one of the major explanations for lack of waterflood response to date and the continued decline in oil productivities.

The Waskada Lower Amaranth is becoming a non-conventional tight oil resources play that utilizes horizontal multi-stage frac drilling technology (small multi-stage frac stimulations on newly drilled wells will remain “in zone” within the Lower Amaranth) to re-develop the thick low perm oil zones adjacent to the conventional Amaranth zone that was discovered in the 1980’s. Penn West drilled 3 horizontal wells, to increase the Recovery Factor (RF), in year 2010, 102/12-24-001-26W1, 103/13-24-001-26W1 and 103/16-24-001-26W1/00. Penn West’s follow up plan once we have drilled more horizontal wells in the Units is to convert some of the recent horizontal producing wells to injection wells to increase the sweep efficiency and ultimately increase the recoverable oil in place.

The following is the HZ Multi Stage Fracture Technology that we are using in our new development

HZ Multi Stage Fracture Technology



TABLES

Waskada Lower Amaranth Unit #1

Table 1: Rates History

Production Data						
Date	Oil		Water		Injection Water	
Year	m3/year	m3/day	m3/year	m3/day	m3/year	m3/day
1981	1,293	3.54	647	1.77	0	0.00
1982	34,589	94.76	8,564	23.46	0	0.00
1983	63,455	173.85	26,801	73.43	98,755	270.56
1984	55,295	151.49	28,617	78.40	132,955	364.26
1985	41,787	114.48	27,555	75.49	86,897	238.07
1986	37,496	102.73	28,006	76.73	107,802	295.35
1987	32,268	88.41	39,340	107.78	82,230	225.29
1988	28,003	76.72	25,126	68.84	64,867	177.72

1989	23,117	63.33	20,406	55.91	9,366	25.66
1990	19,472	53.35	16,000	43.83	24,156	66.18
1991	13,902	38.09	16,050	43.97	31,802	87.13
1992	12,342	33.81	17,729	48.57	41,247	113.01
1993	10,180	27.89	20,905	57.28	81,517	223.33
1994	11,592	31.76	15,873	43.49	26,062	71.40
1995	11,593	31.76	18,340	50.25	56,183	153.92
1996	11,489	31.48	16,992	46.55	57,114	156.48
1997	8,731	23.92	15,108	41.39	46,833	128.31
1998	7,120	19.51	13,147	36.02	24,871	68.14
1999	5,829	15.97	11,053	30.28	17,130	46.93
2000	5,998	16.43	11,740	32.16	12,856	35.22
2001	6,356	17.41	10,508	28.79	15,584	42.70
2002	5,846	16.02	9,016	24.70	12,815	35.11
2003	5,399	14.79	7,476	20.48	10,947	29.99
2004	4,779	13.09	6,511	17.84	9,381	25.70
2005	4,146	11.36	7,149	19.59	8,353	22.88
2006	4,094	11.22	7,752	21.24	11,382	31.18
2007	3,775	10.34	8,308	22.76	36,593	100.26
2008	3,227	8.84	8,271	22.66	10,750	29.45
2009	4,690	12.85	10,887	29.83	6,697	18.35
2010	2,468	6.76	8,421	23.07	17,244	47.24
2011	1,324	3.63	4,994	13.68	1,465	4.01
2012	1,559	4.27	4,360	11.94	20,972	57.46

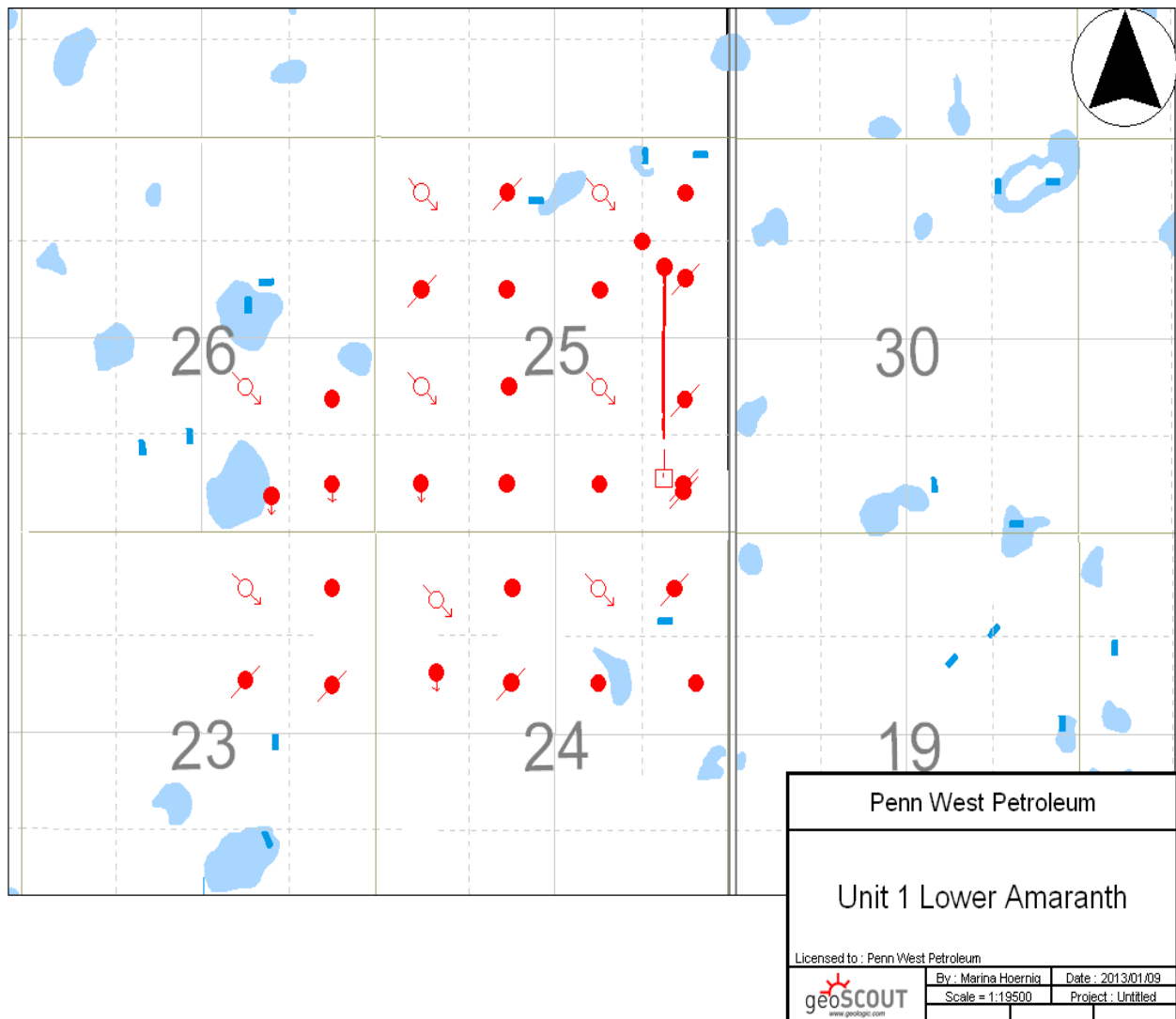
Waskada Lower Amaranth Unit #1

Table 2: Pressure Surveys

Location	Shut In Date	Date of Survey	Type of Survey	Pressure @ Datum Depth (kPa)
02/12-24-001-26W1/0	17-Oct-10	24-Oct-10	BHP Build Up	1016
03/13-24-001-26W1/0	17-Oct-10	24-Oct-10	BHP Build Up	3179
00/15-24-001-26W1/0	Dec-89	(18 days)	Static Gradient	10482
00/06-25-001-26W1/0	(8 days)	11-Dec-06	Acoustic Build Up	4186
00/09-25-001-26W1/0		2008	BHP, Assuming WC from Last Prod'n	4881
02/09-25-001-26W1/0	17-Oct-10	24-Oct-10	BHP Build Up	1743
00/15-25-001-26W1/0	Jan-90	(68 days)	Static Gradient	11144
00/16-25-001-26W1/0		2008	BHP, Assuming WC from Last Prod'n	5765
00/08-26-001-26W1/0		2008	BHP, Assuming WC from Last Prod'n	6267

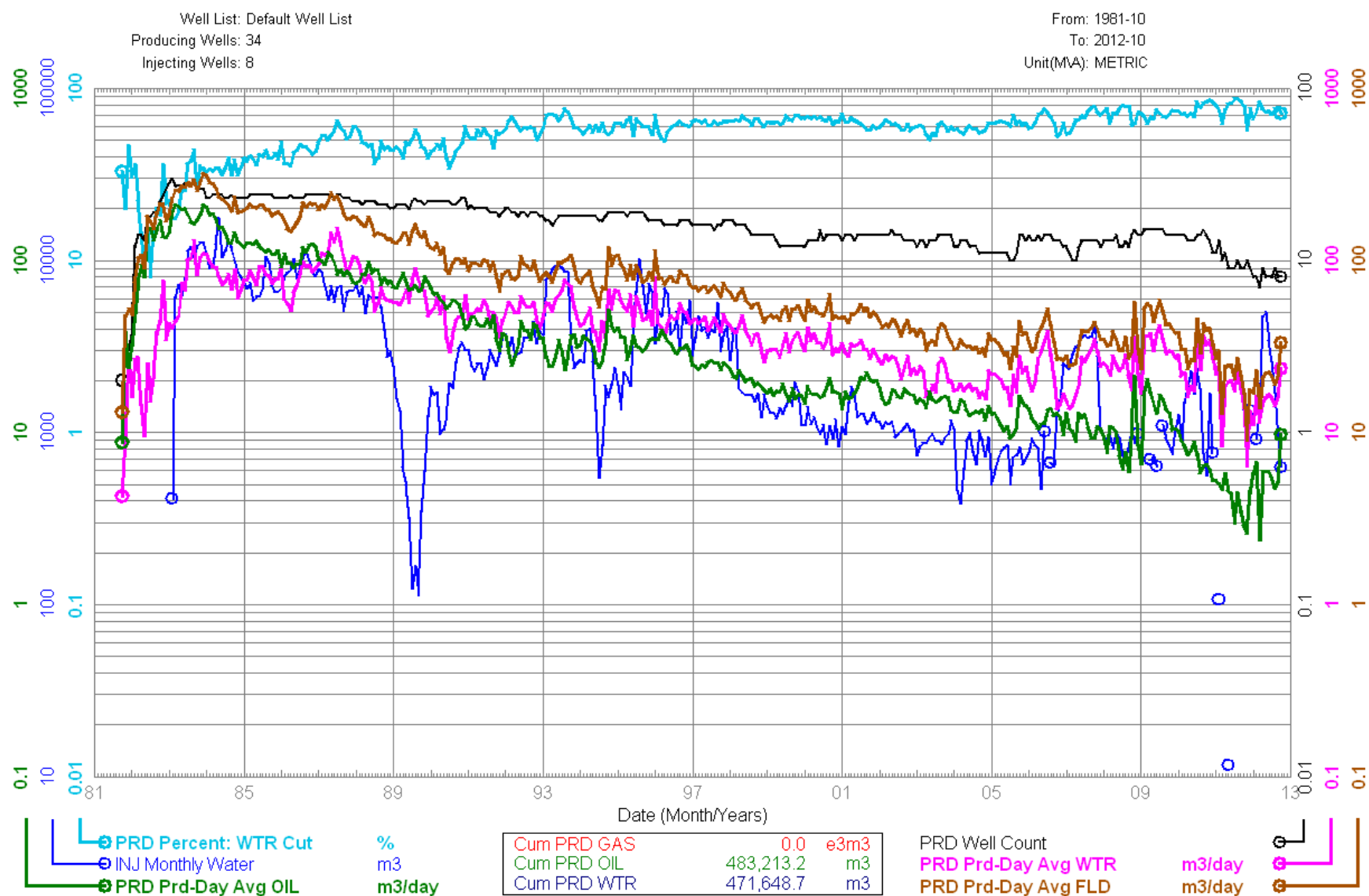
APPENDIX A

Appendix A – Area Map



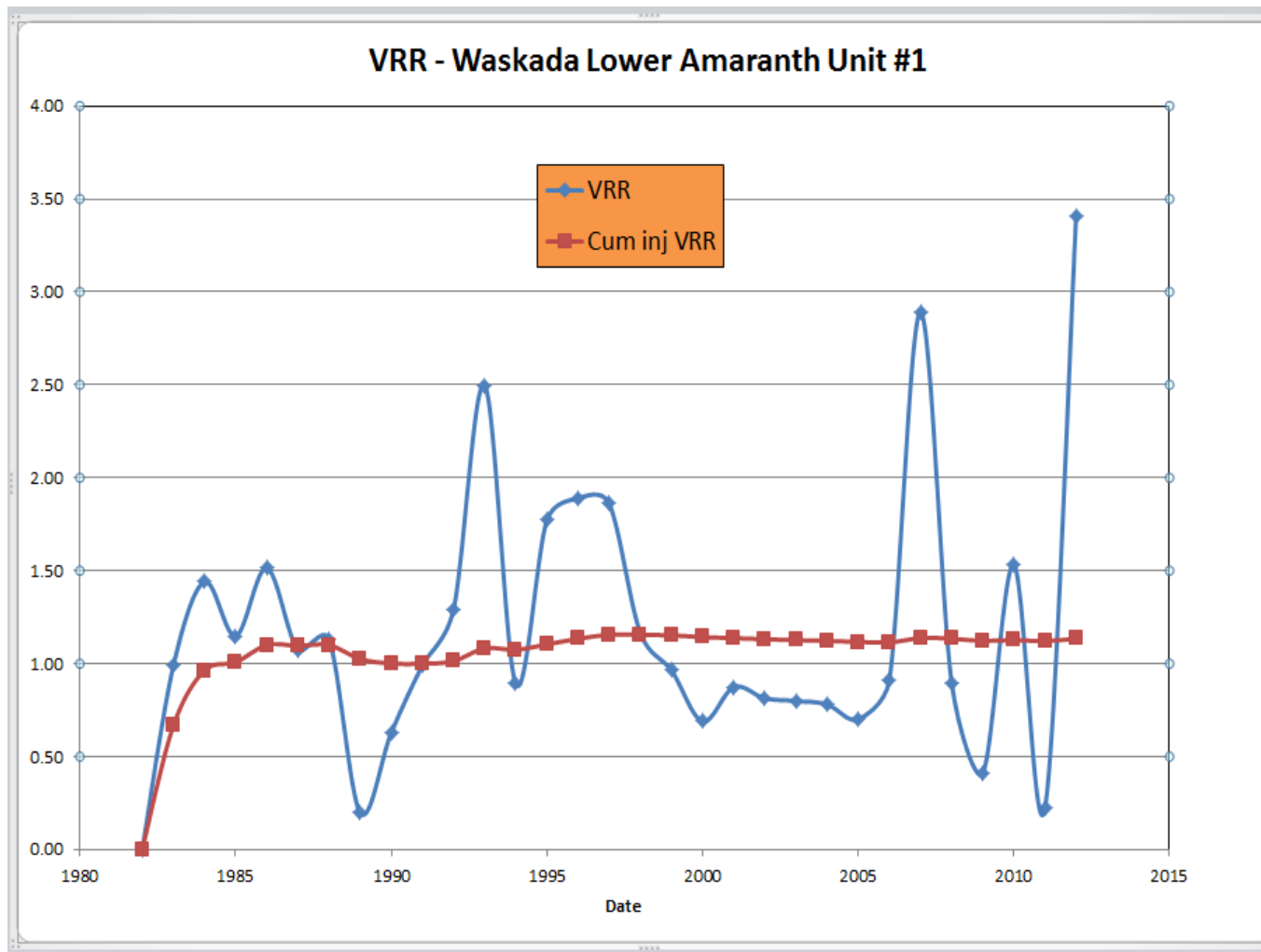
APPENDIX B

Appendix B – Production and Injection History plot



APPENDIX C

Appendix C – Voidage Replacement Ratio VRR



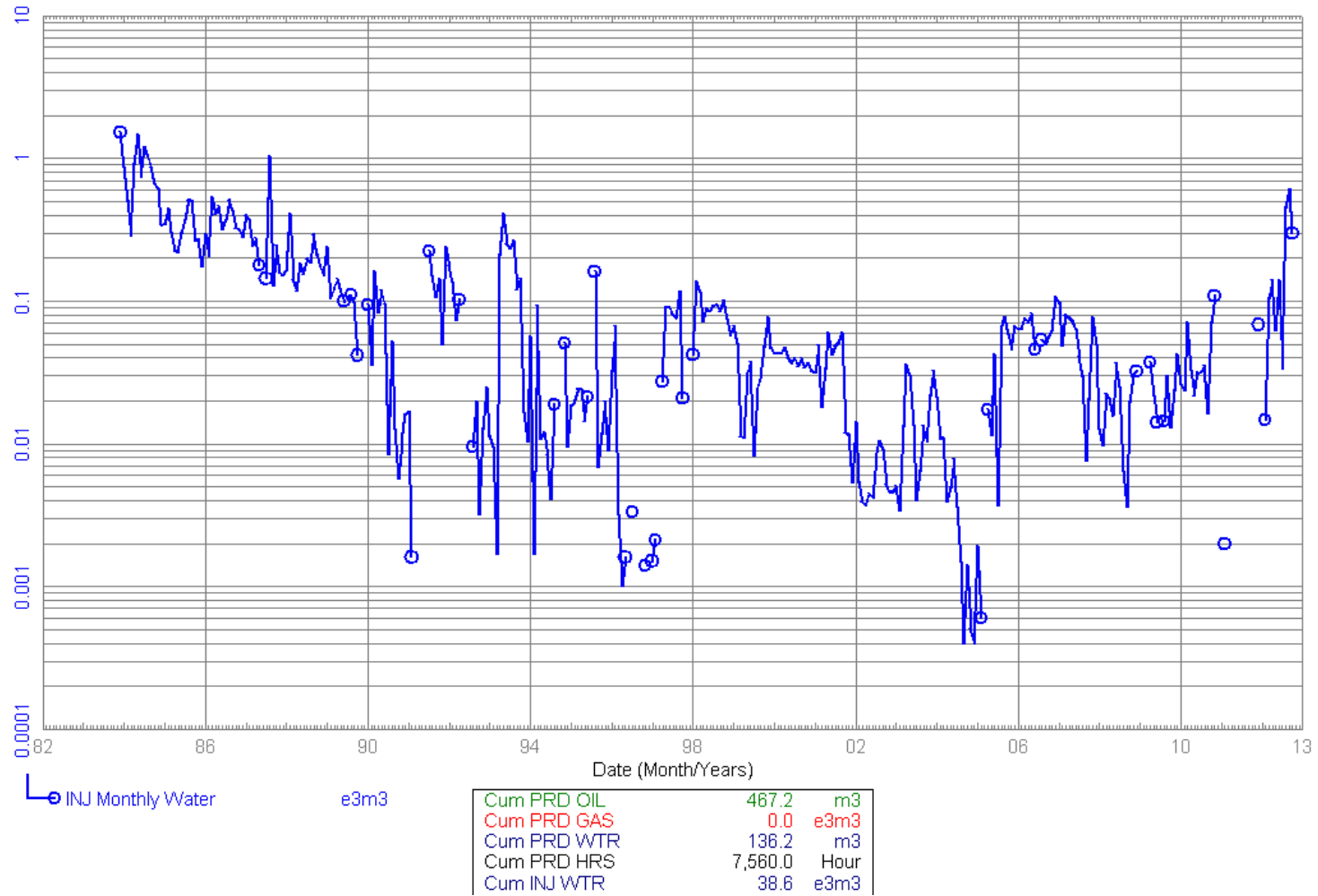
APPENDIX D

Appendix D – Production and Injection Profiles (Individual Wells)

Data As Of: 2012-10 (MB)
From: 1982-11
To: 1983-09

100/15-25-001-26W1/00
Waskada LA Unit No. 1 WW
Water Inj Well

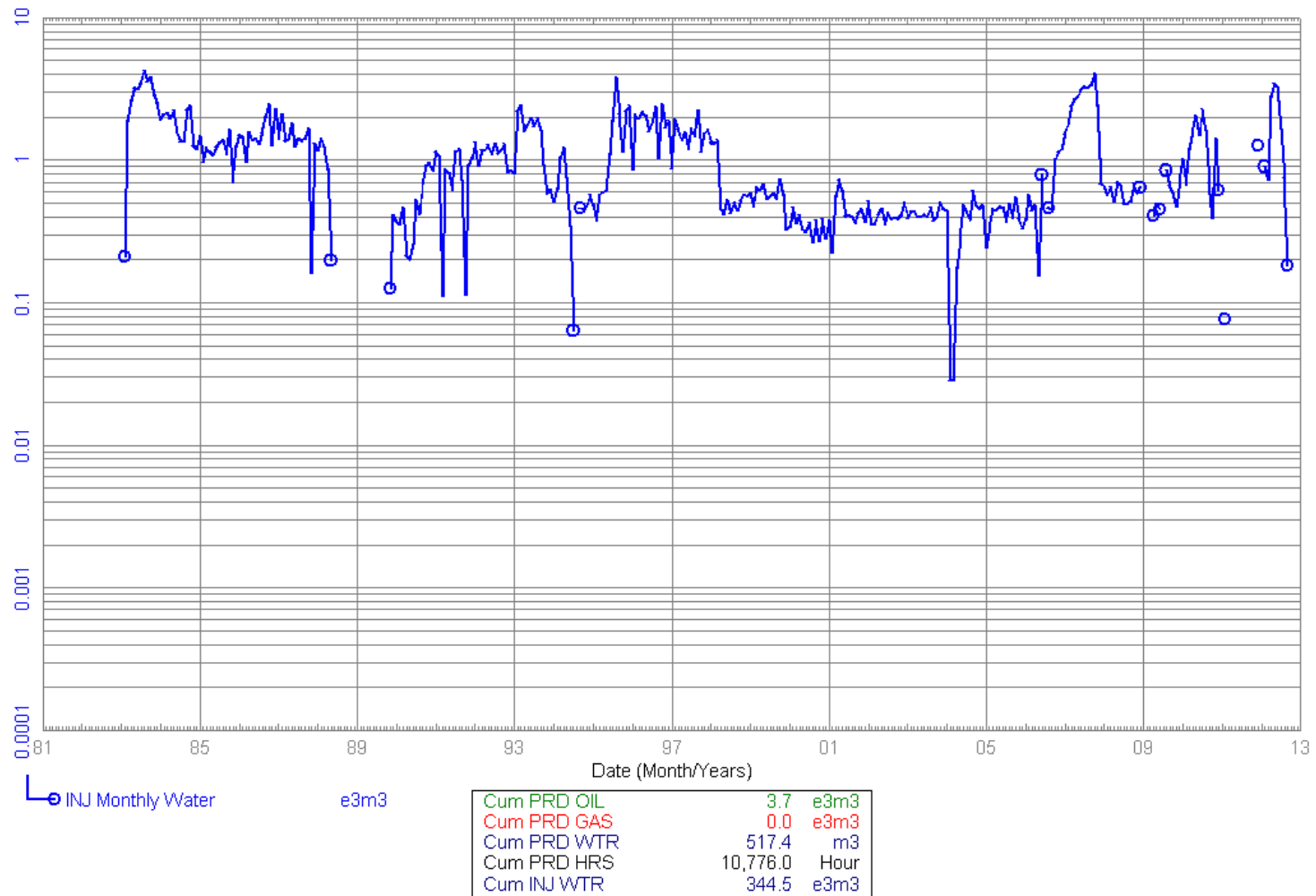
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1981-10
To: 1983-02

100/05-25-001-26W1/02
Waskada LAm Unit No. 1 WIW
Water Inj Well

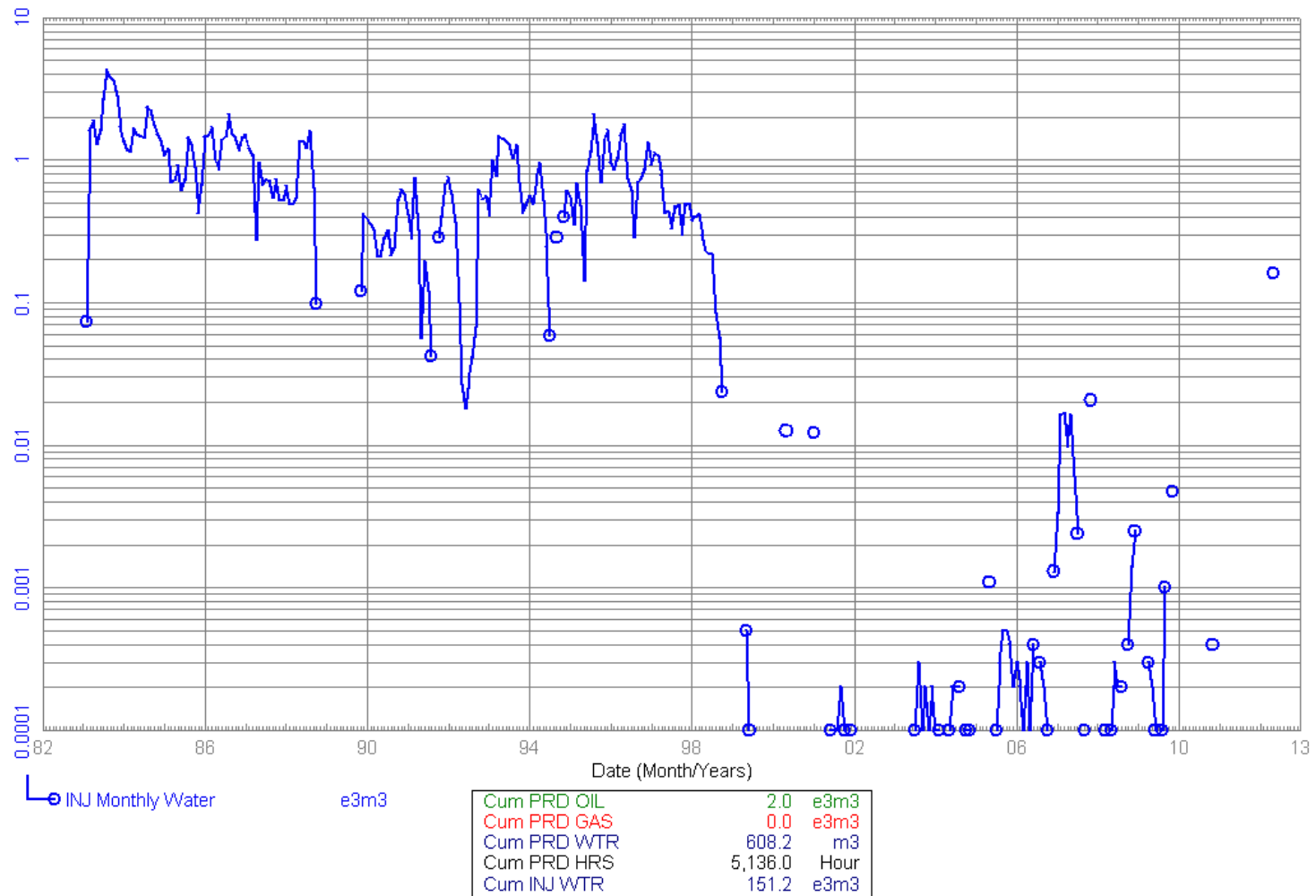
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-06
To: 1983-02

100/07-25-001-26W1/00
Waskada LAm Unit No. 1 WW
Water Inj Well

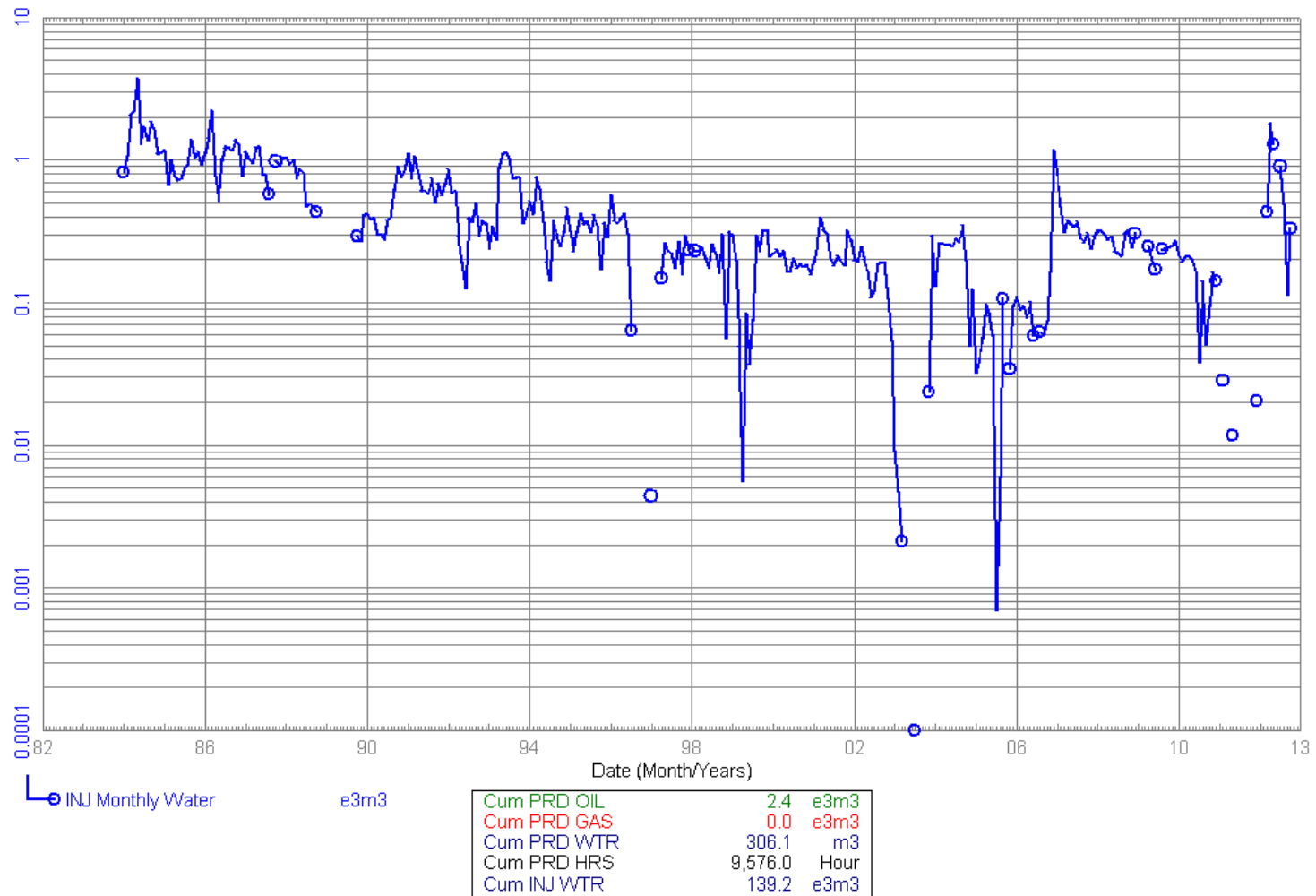
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-10
To: 1983-12

100/07-26-001-26W1/00
Waskada LAm Unit No. 1 WIW
Water Inj Well

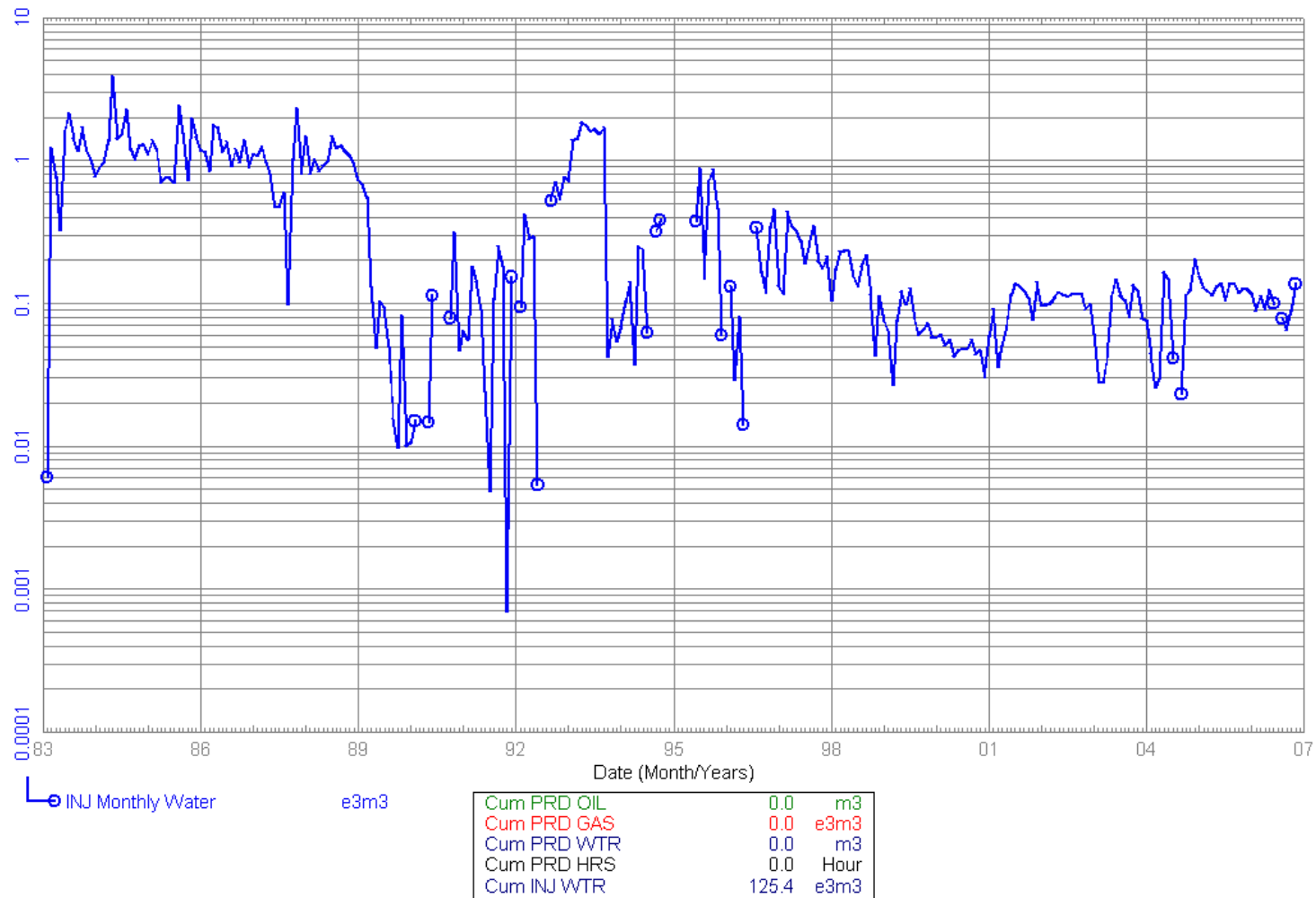
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1983-02
To: 2006-11

102/13-24-001-26W1/00
Waskada LAm Unit No. 1 WIW
Water Inj Well

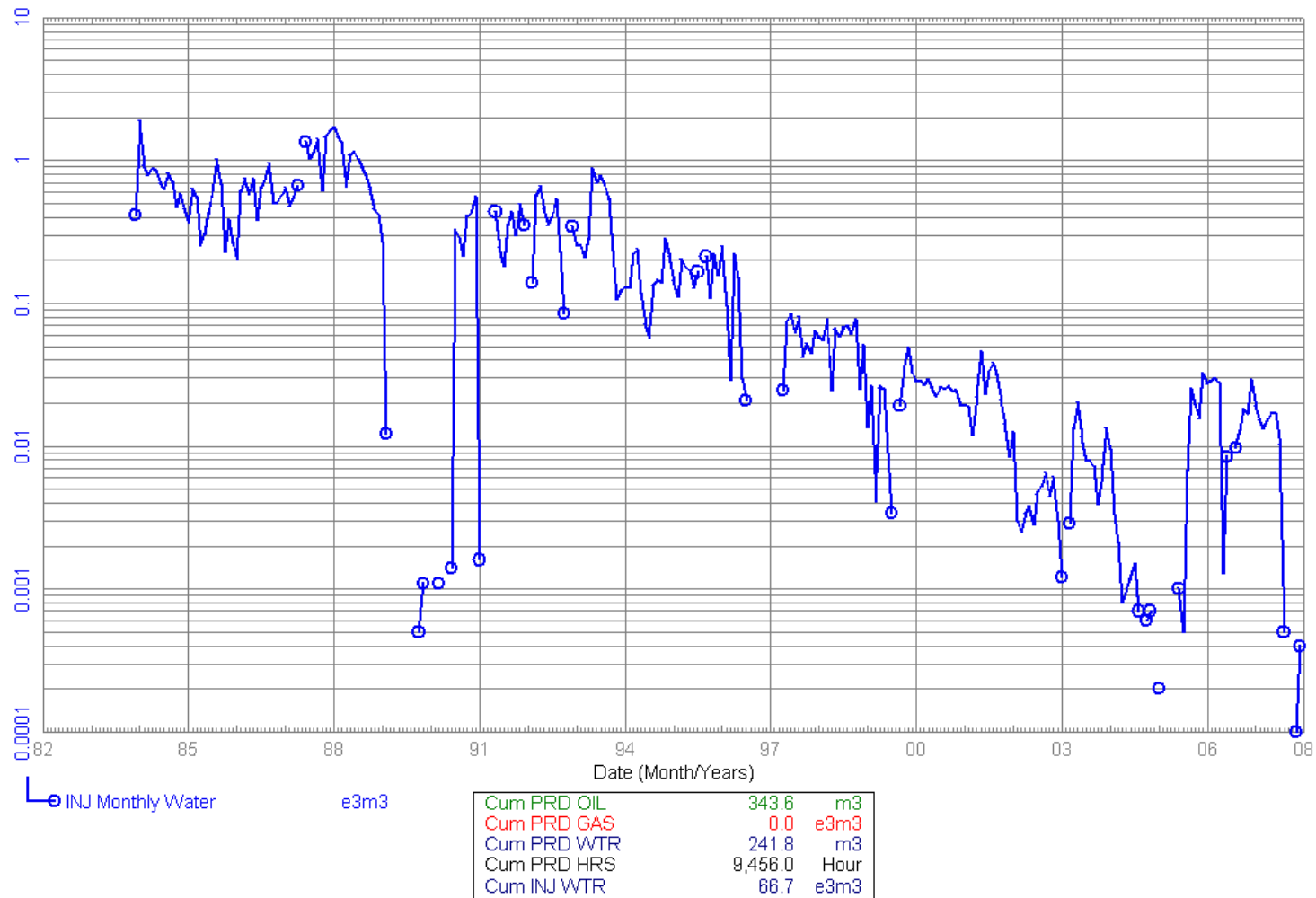
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-10
To: 1983-12

100/13-25-001-26W1/00
Waskada LAm Unit No. 1 WWI
Water Inj Well

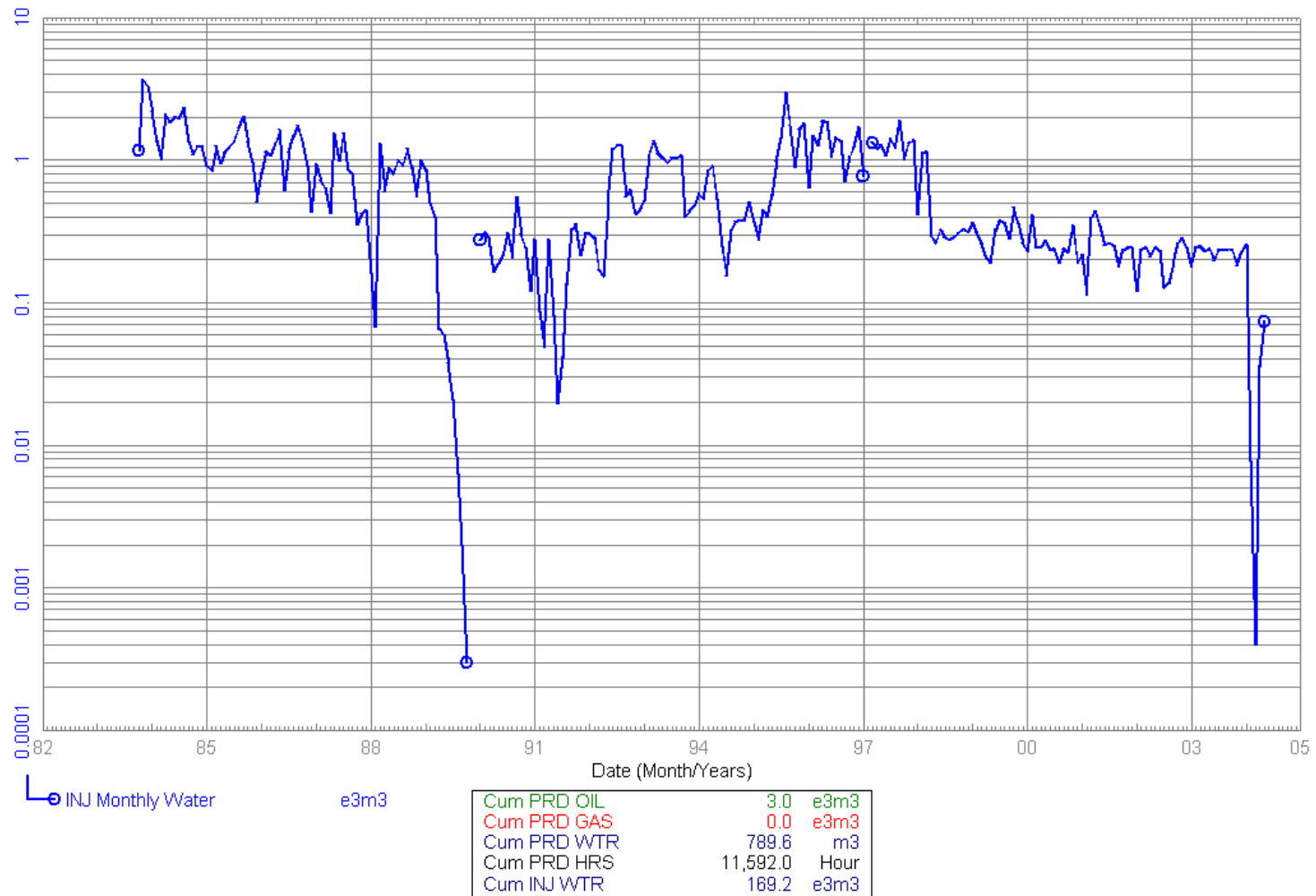
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-02
To: 1983-09

100/15-23-001-26W1/00
Waskada LAm Unit No. 1 WIW
Water Inj Well

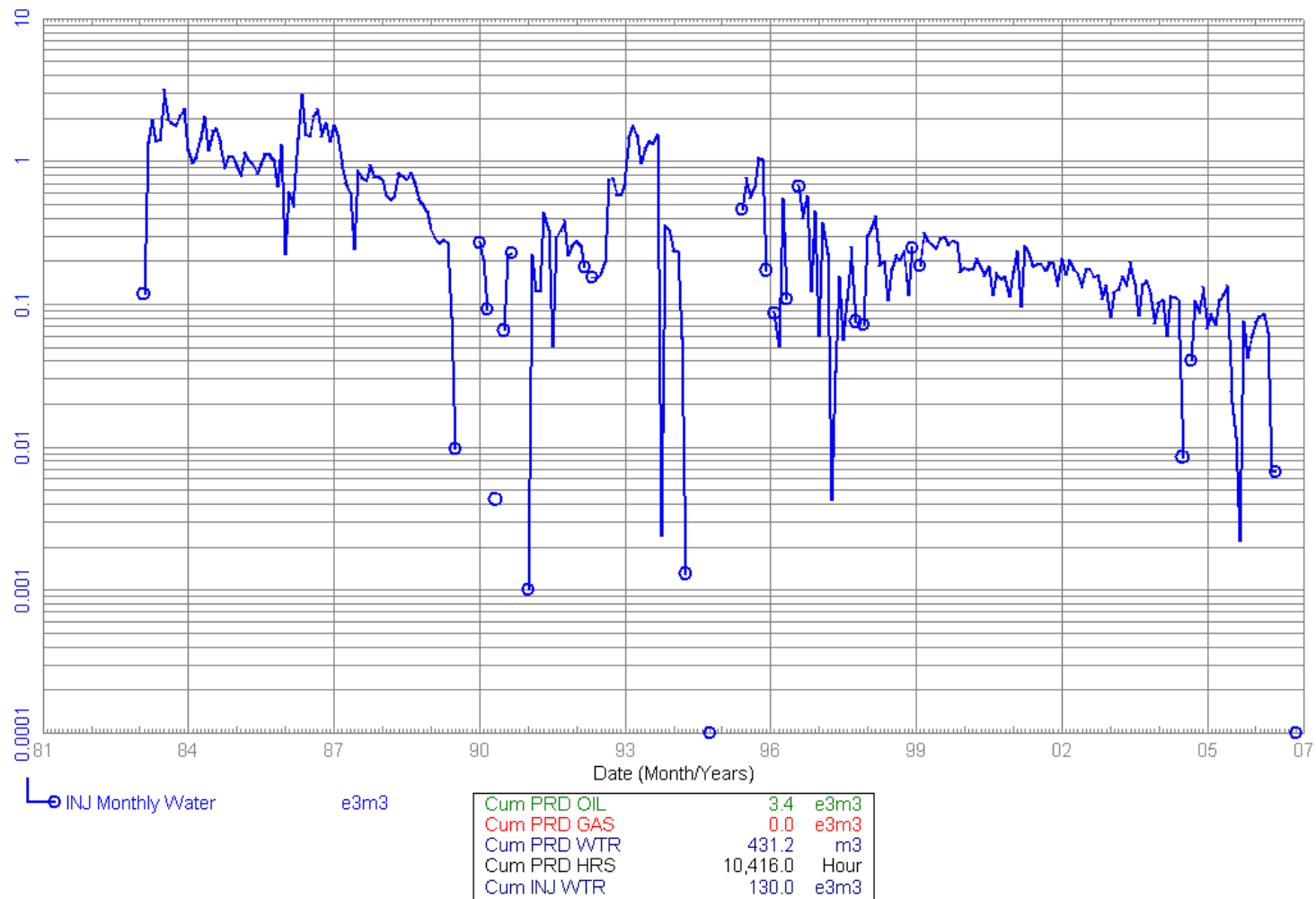
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1981-10
To: 1983-02

100/15-24-001-26W1/00
Waskada LA Unit No. 1 WIW
Water Inj Well

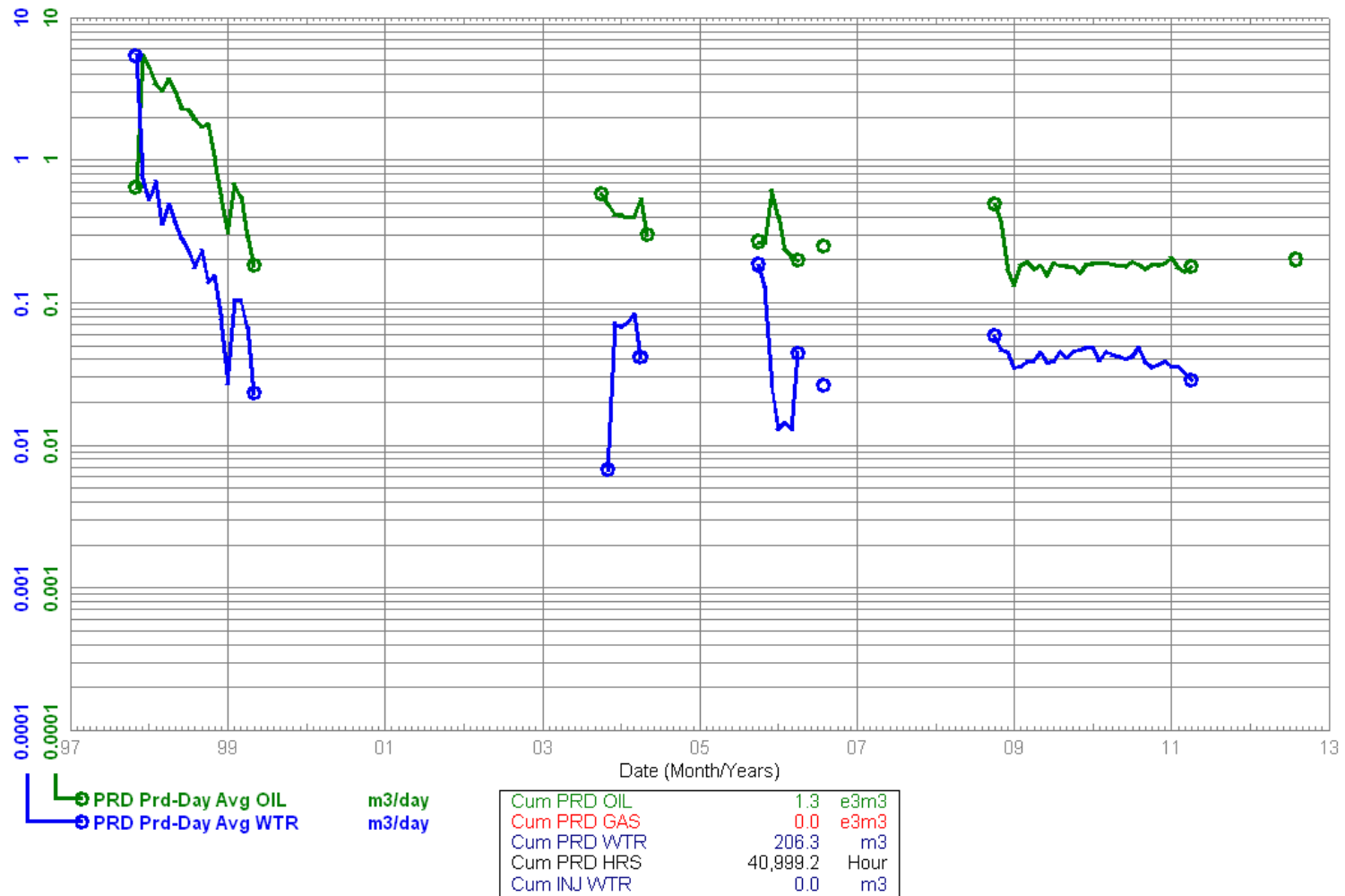
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1997-11
To: 2012-08

1B0/16-25-001-26W1/00
Waskada LA Unit No. 1
Capable Of Oil Prod

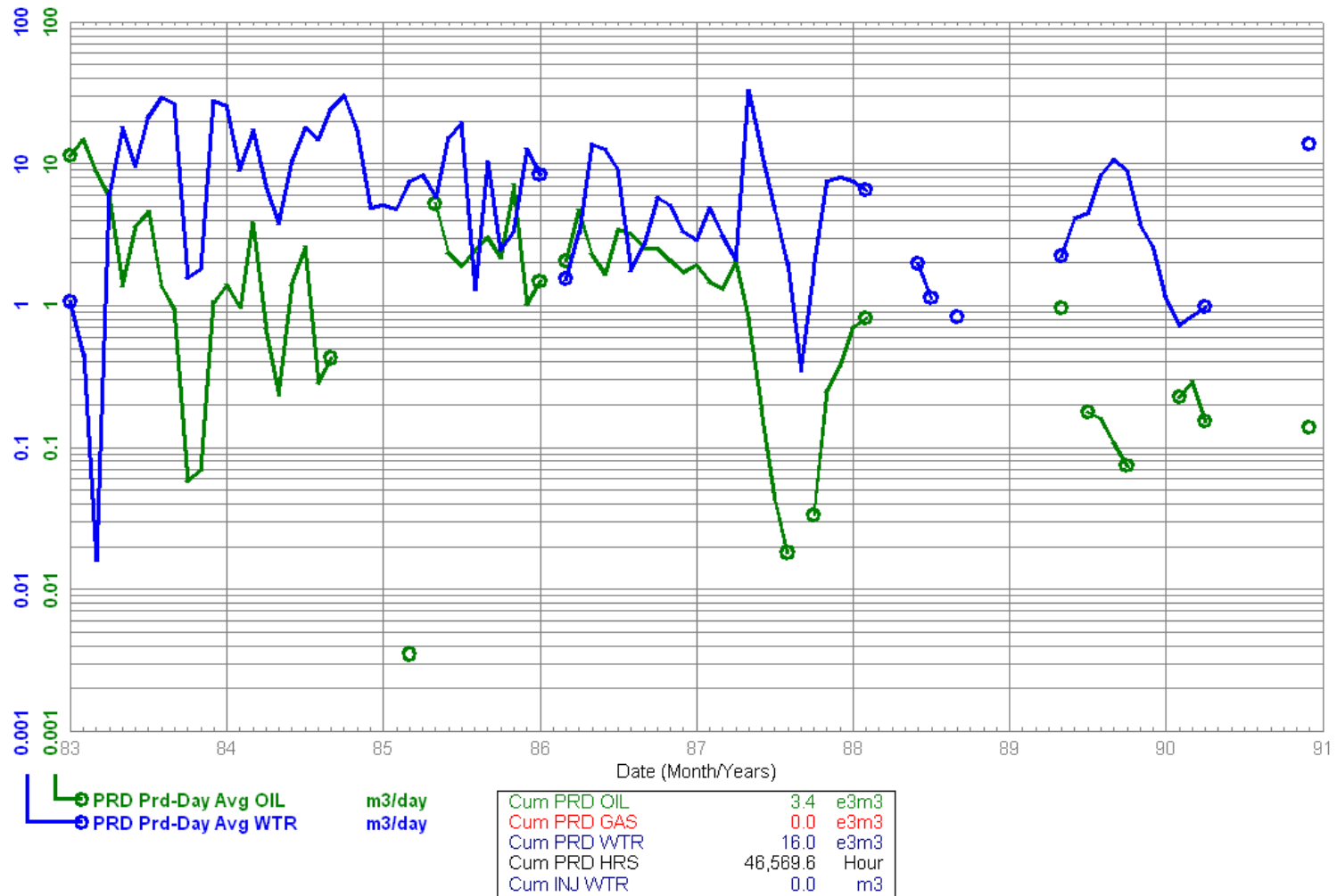
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1983-01
 To: 1990-12

102/01-25-001-26W1/00
 Waskada LAm Unit No. 1
 Abandoned Producer

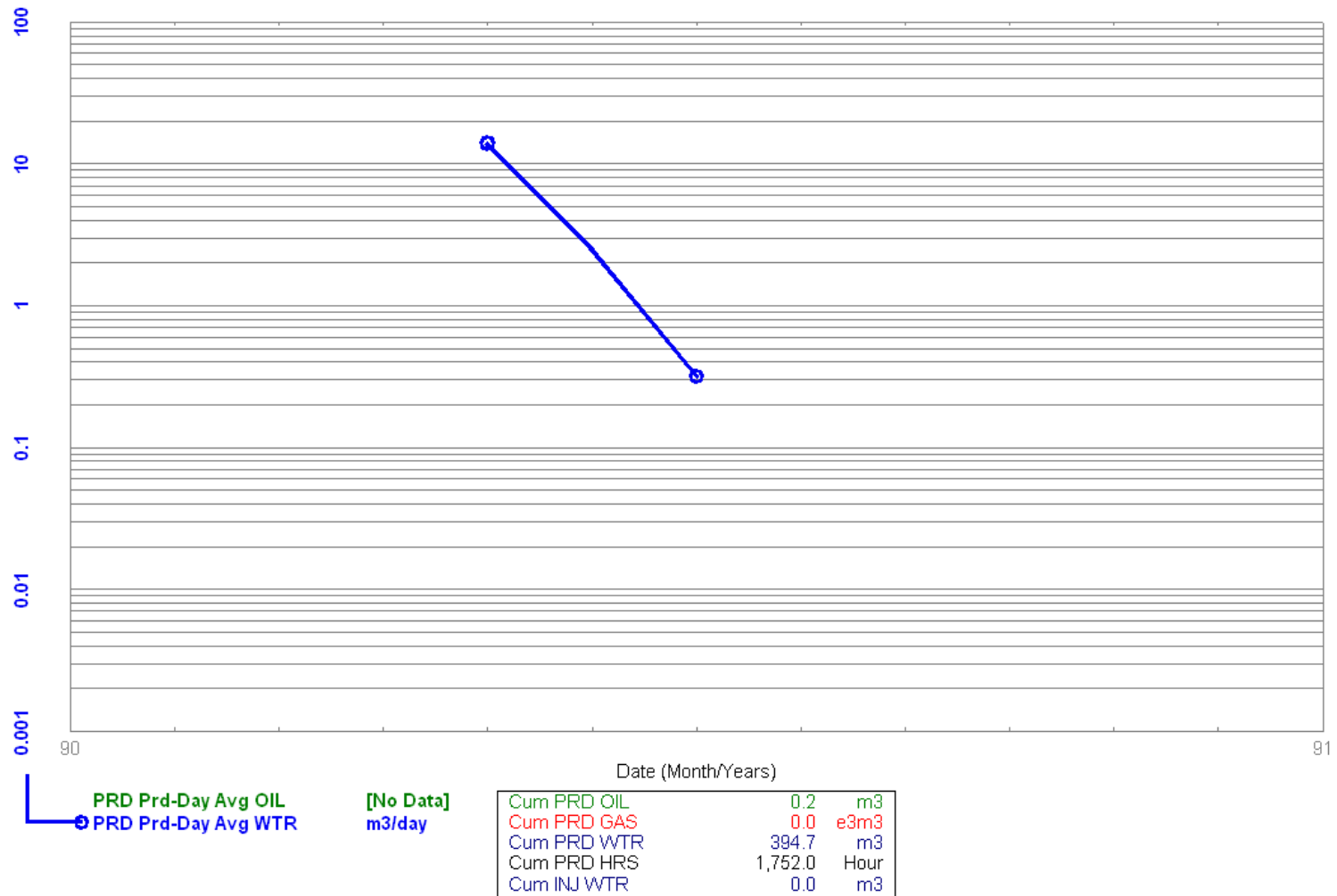
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1990-05
To: 1990-11

100/01-25-001-26W1/02
Waskada LAm Unit No. 1
Abandoned Producer

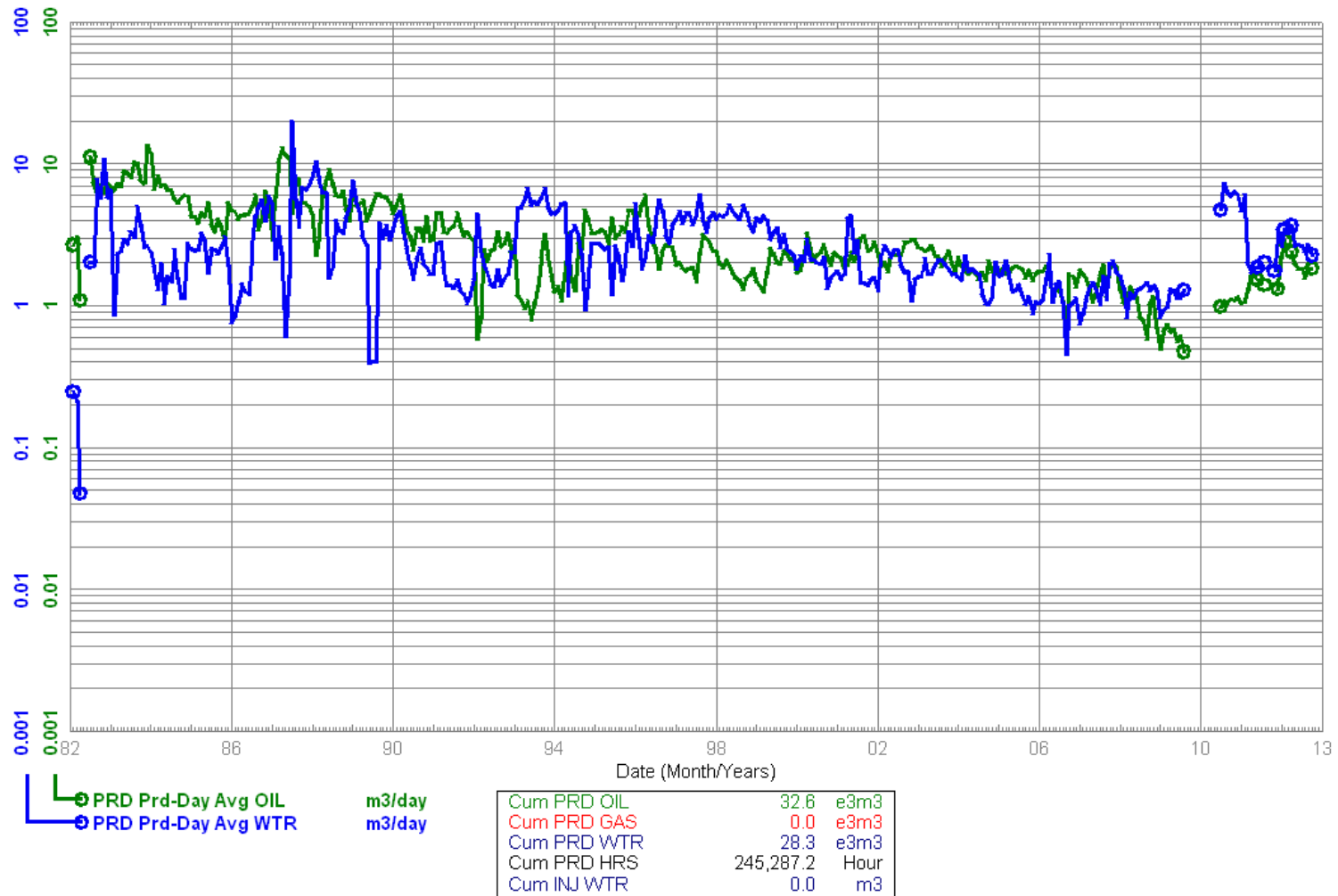
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 2012-10

100/01-26-001-26W1/02
 Waskada LAm Unit No. 1
 Comingled

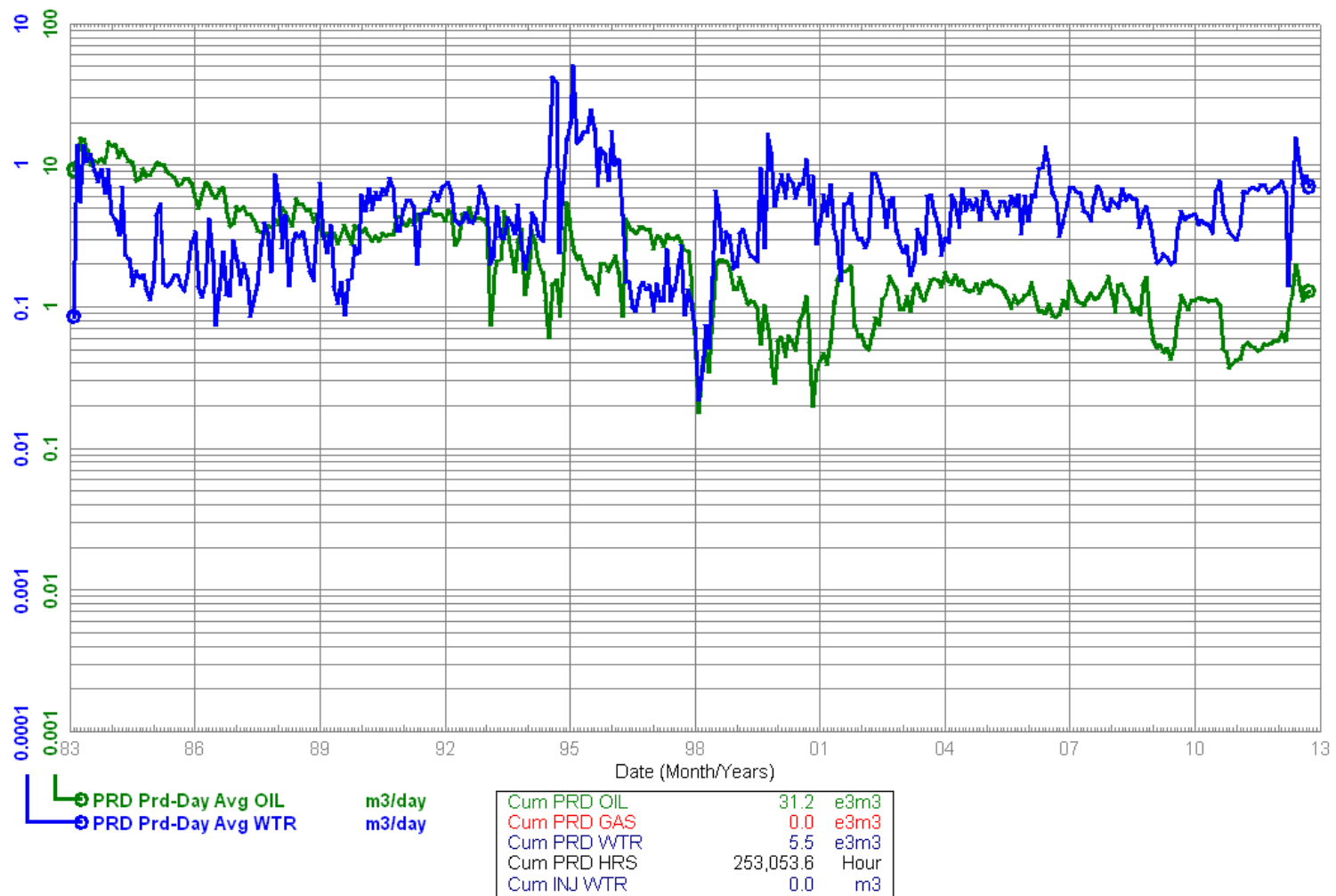
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1983-02
To: 2012-10

100/02-25-001-26W1/02
Waskada LAm Unit No. 1
Capable Of Oil Prod

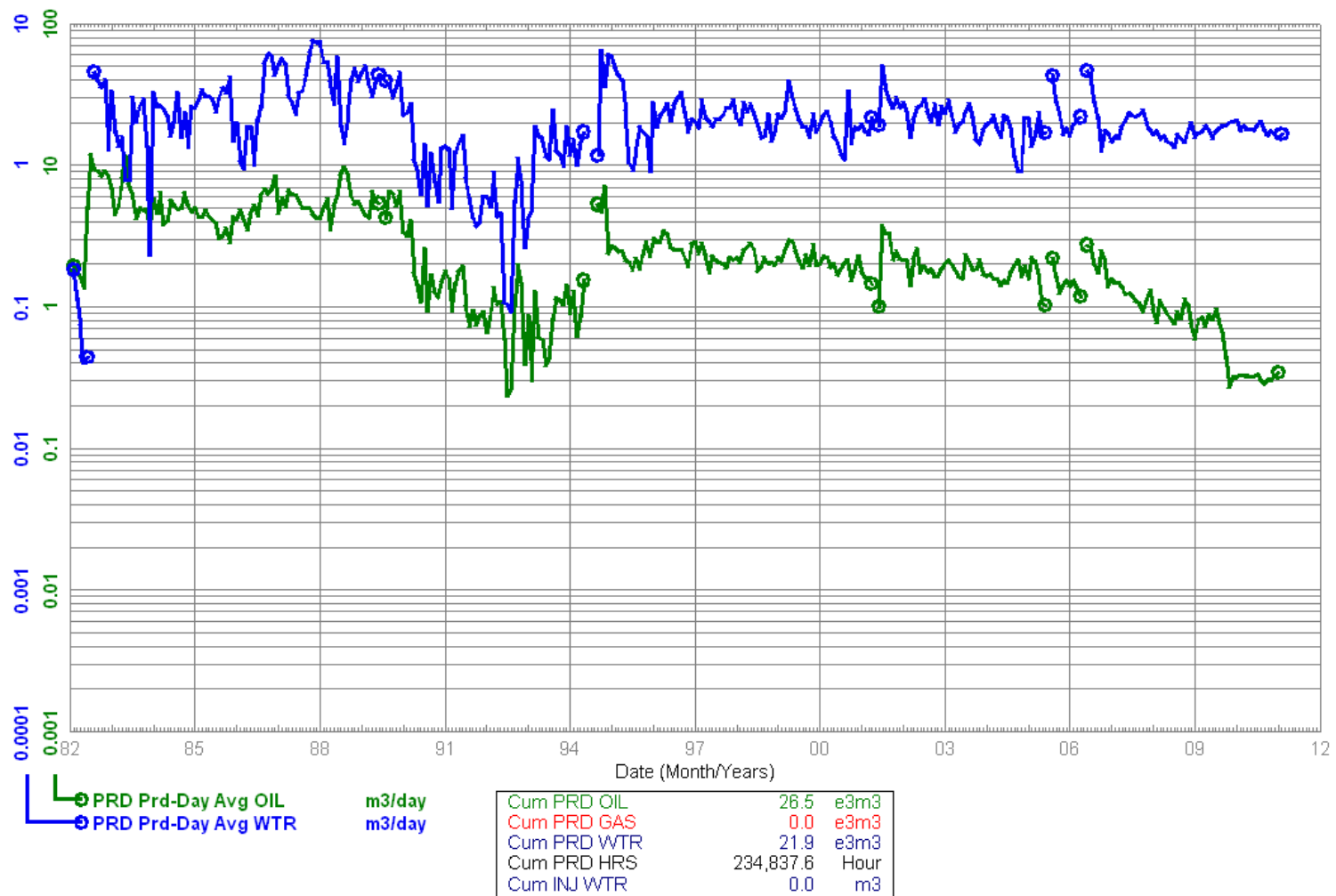
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 2011-02

100/02-26-001-26W1/00
 Waskada LAm Unit No. 1 COM
 Comingled

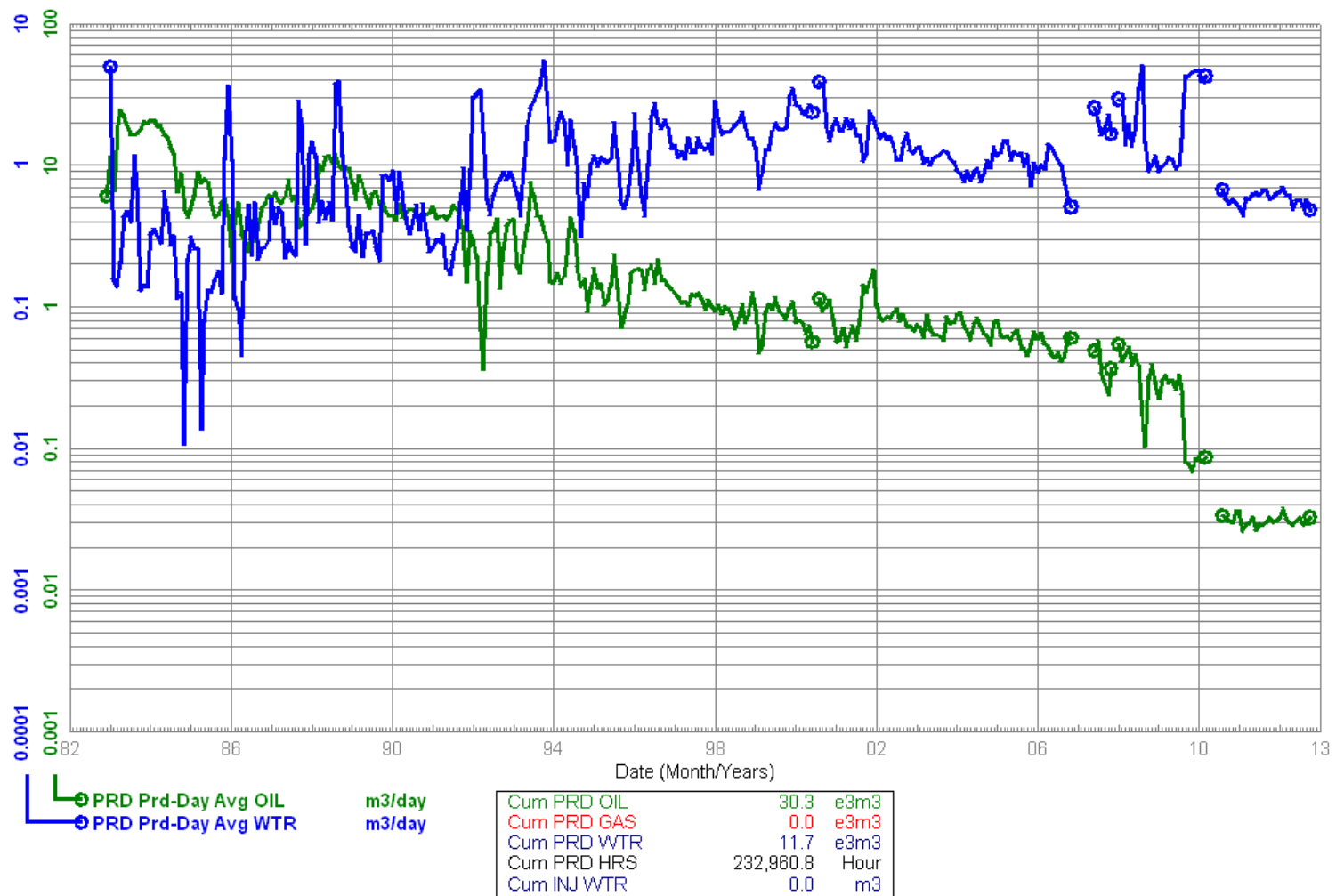
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-12
To: 2012-10

100/03-25-001-26W1/02
Waskada LAm Unit No. 1
Capable Of Oil Prod

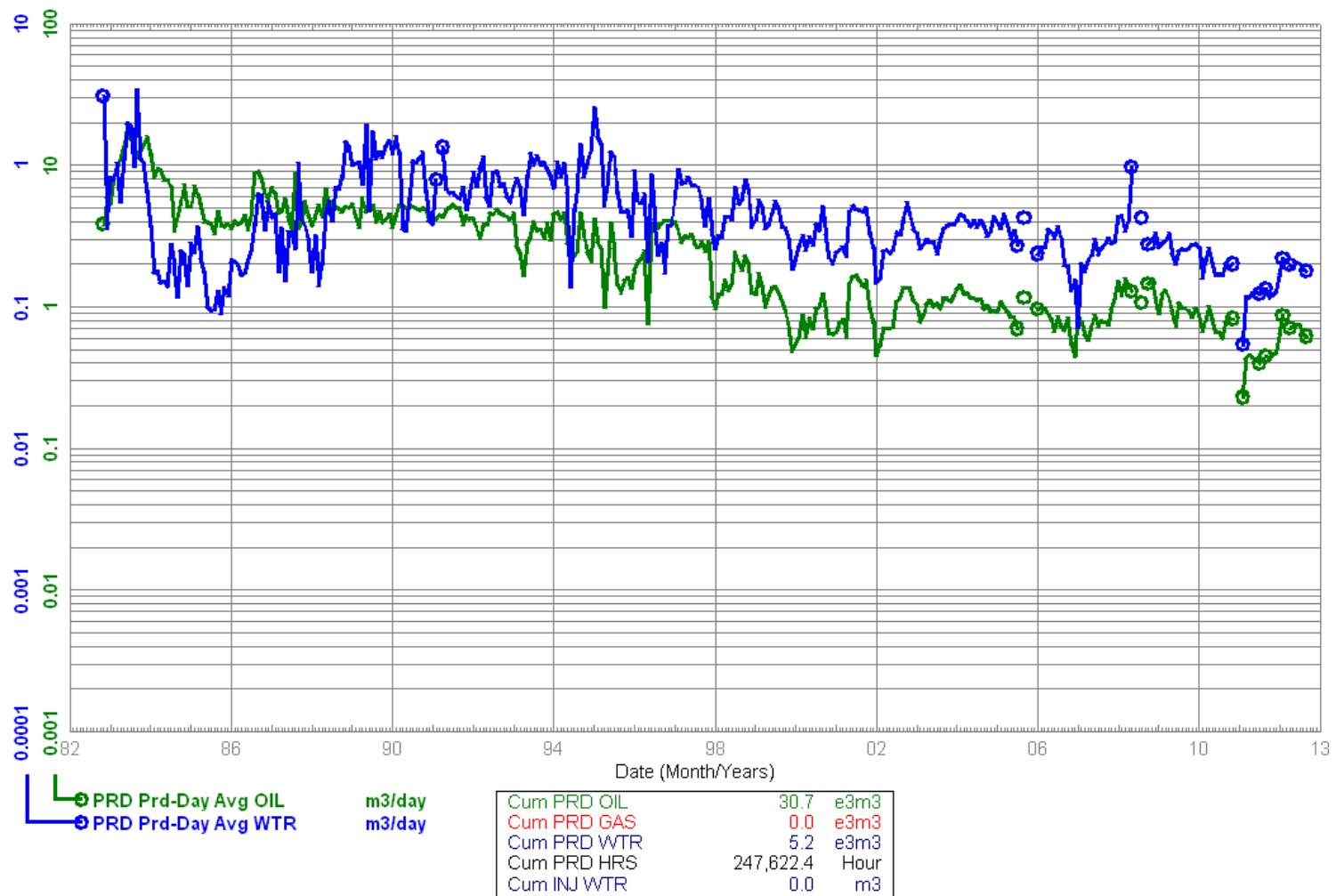
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-11
 To: 2012-09

100/04-25-001-26W1/02
 Waskada Unit No. 12 COM
 Comingled

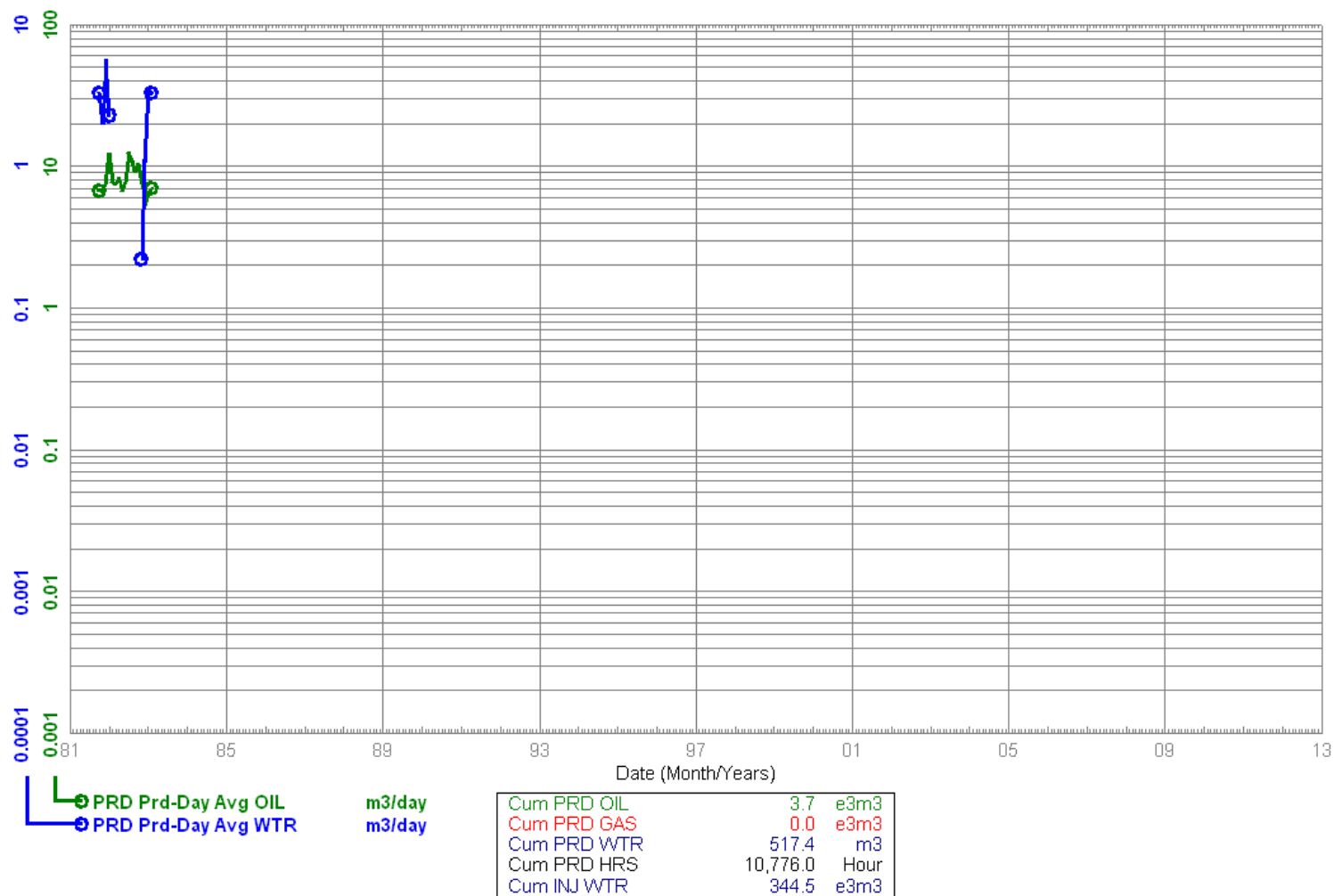
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1981-10
 To: 1983-02

100/05-25-001-26W1/02
 Waskada LAm Unit No. 1 WW
 Water Inj Well

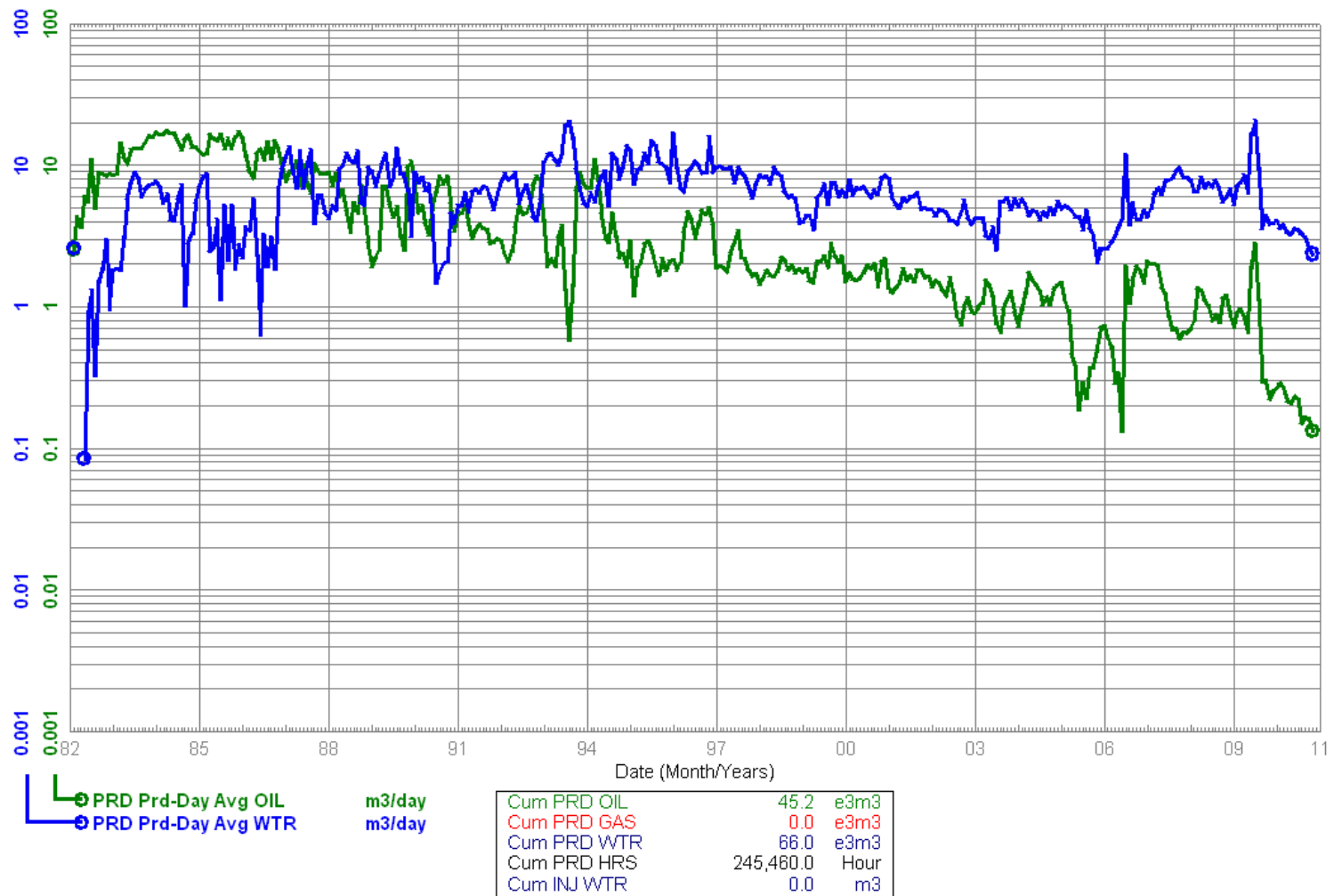
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-02
To: 2010-11

100/06-25-001-26W1/00
Waskada LA Unit No. 1
Capable Of Oil Prod

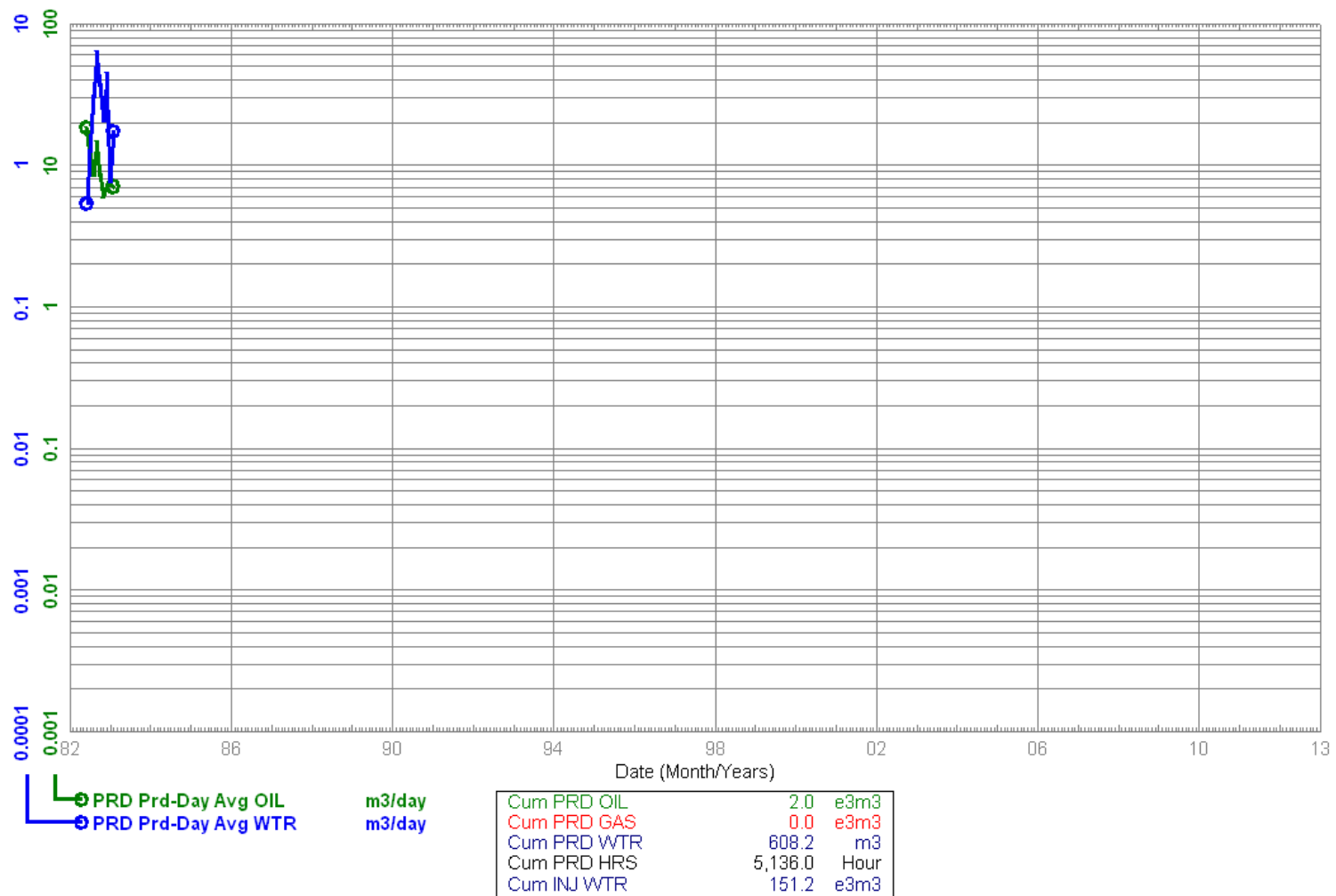
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-06
To: 1983-02

100/07-25-001-26W1/00
Waskada LAm Unit No. 1 WIW
Water Inj Well

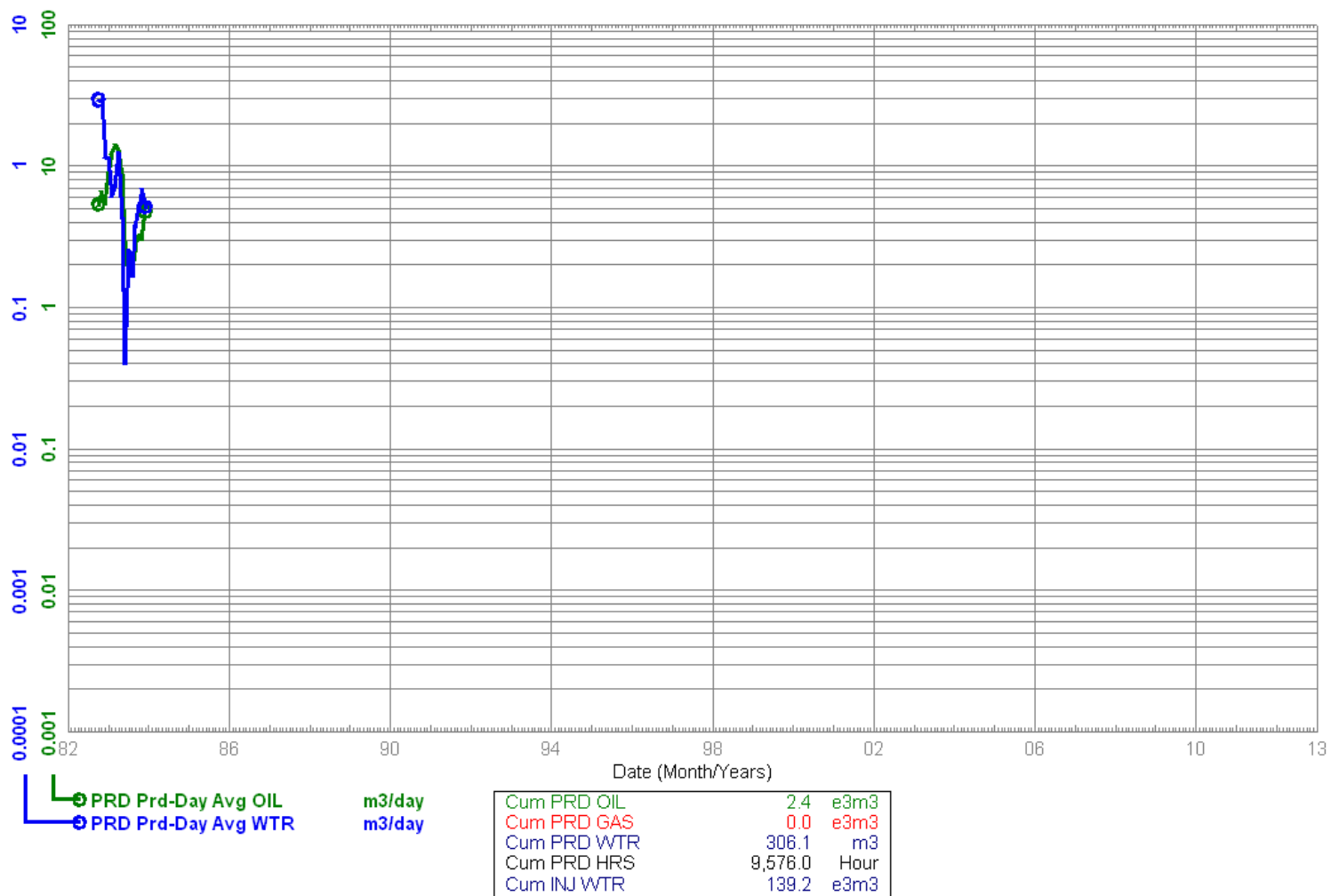
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-10
 To: 1983-12

100/07-26-001-26W1/00
 Waskada LAm Unit No. 1 WIW
 Water Inj Well

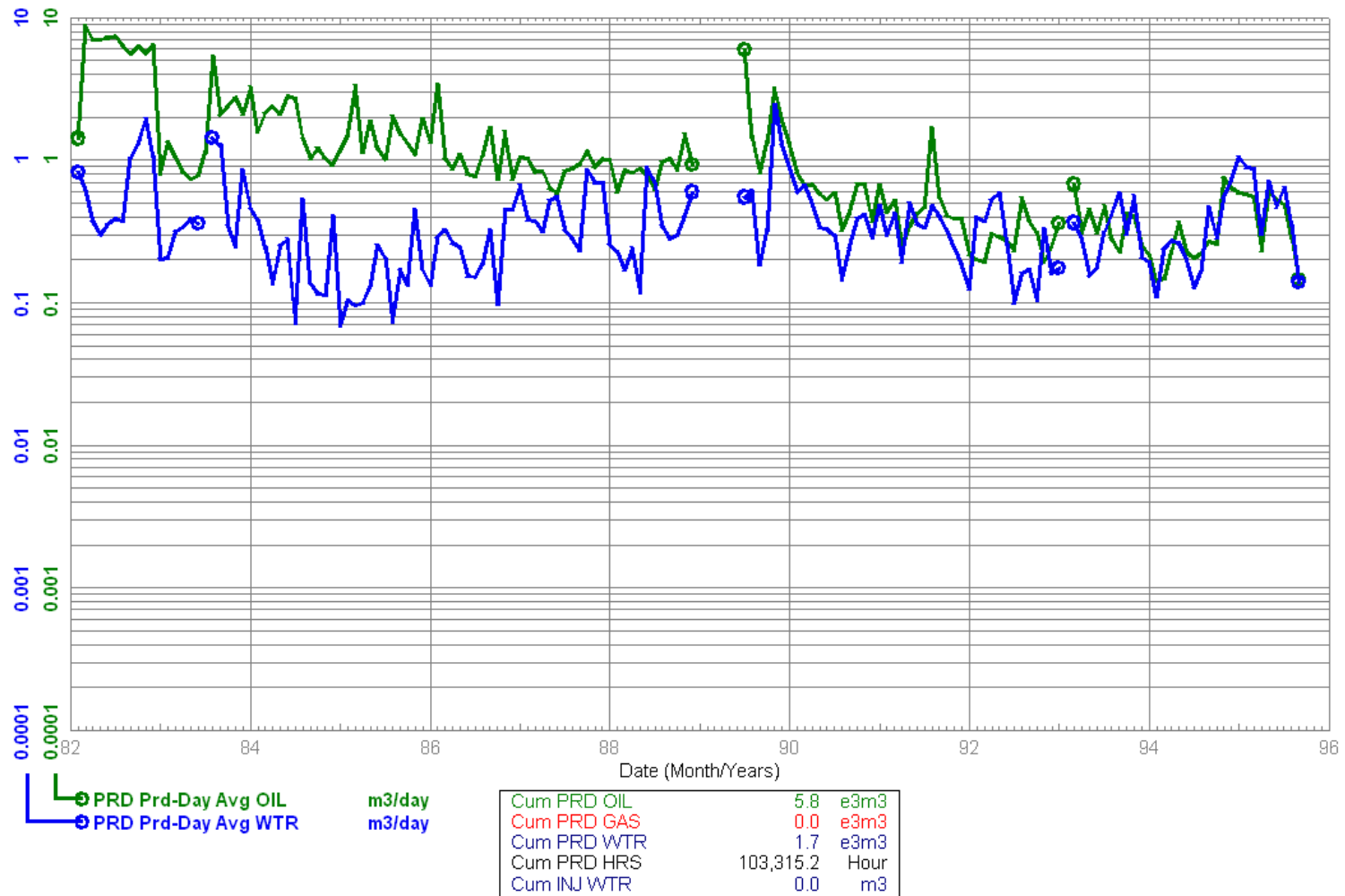
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 1995-09

102/08-25-001-26W1/00
 Waskada LA Unit No. 1
 Abandoned Producer

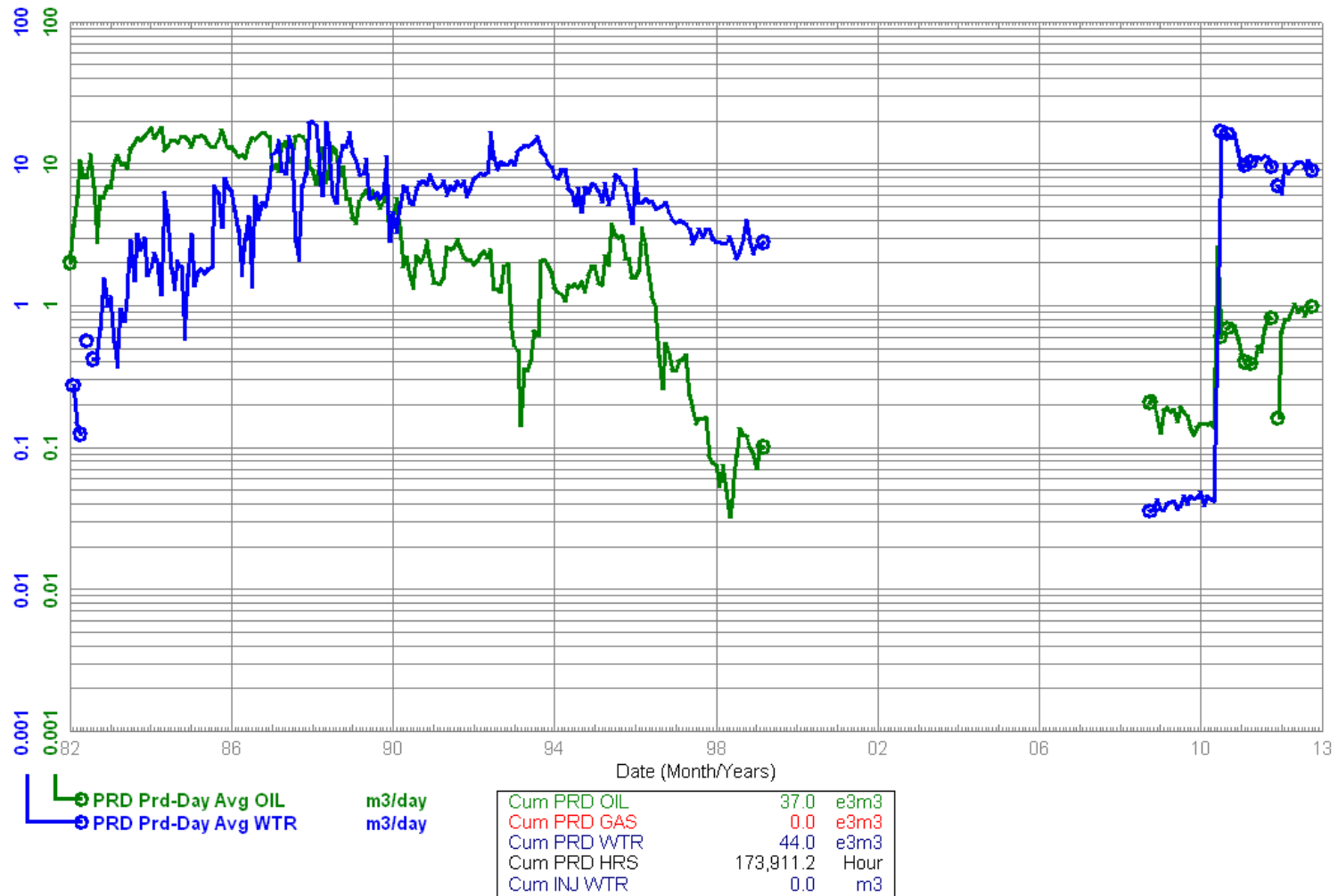
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-01
 To: 2012-10

100/08-26-001-26W1/00
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

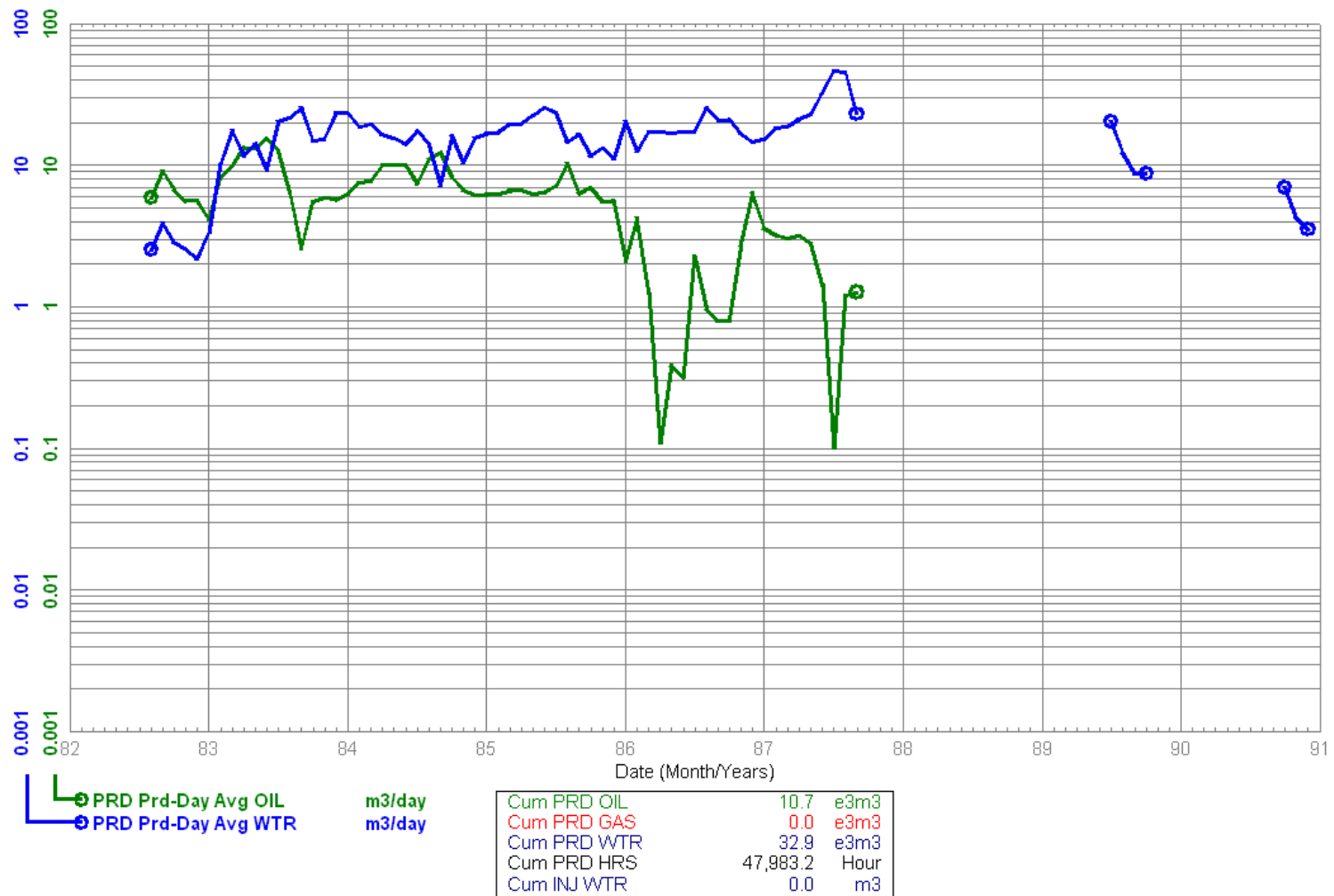
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-08
 To: 1990-12

100/09-23-001-26W1/00
 Waskada LAm Unit No. 1
 Abandoned Producer

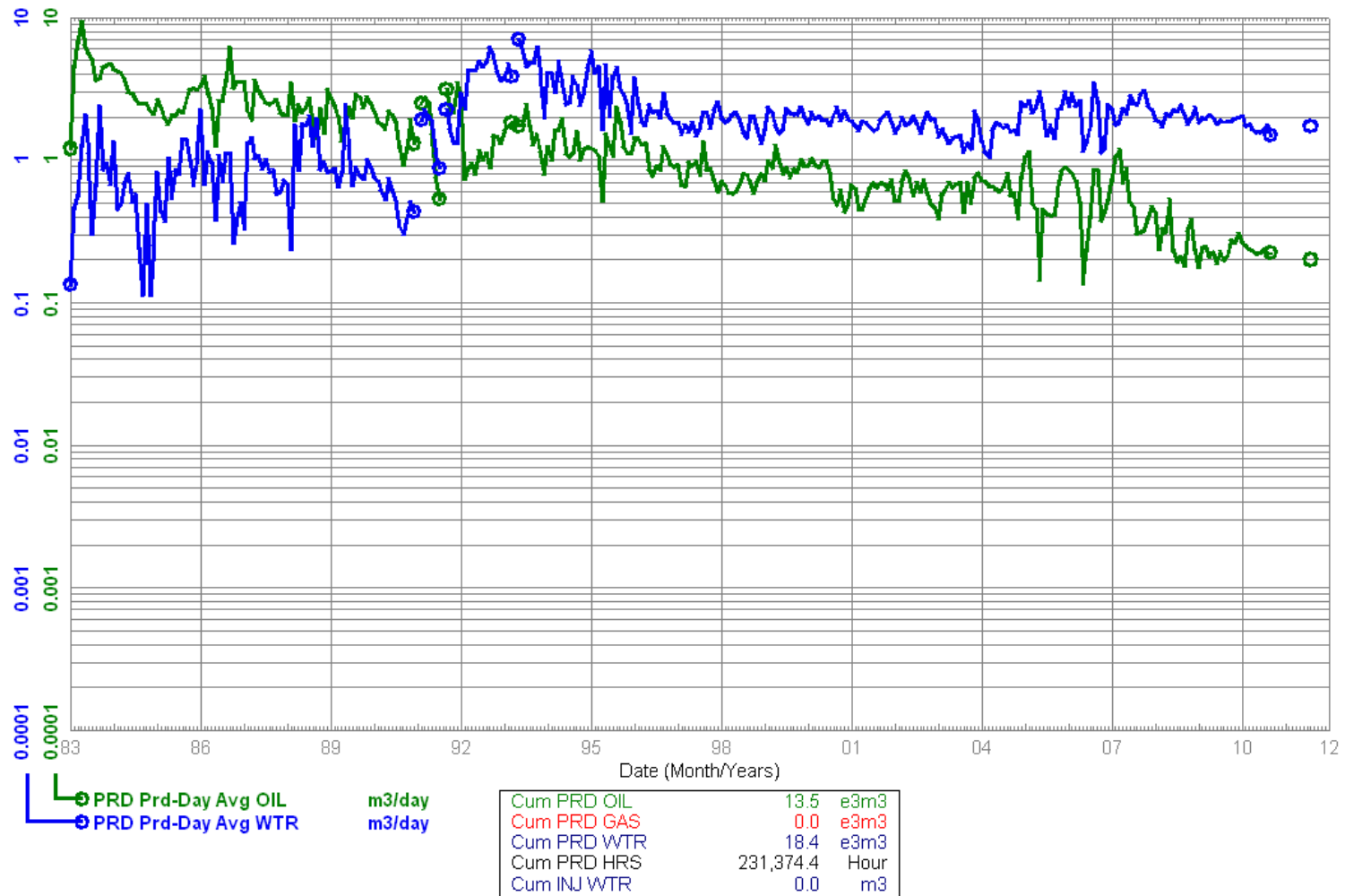
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1983-01
 To: 2011-08

100/09-24-001-26W1/02
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

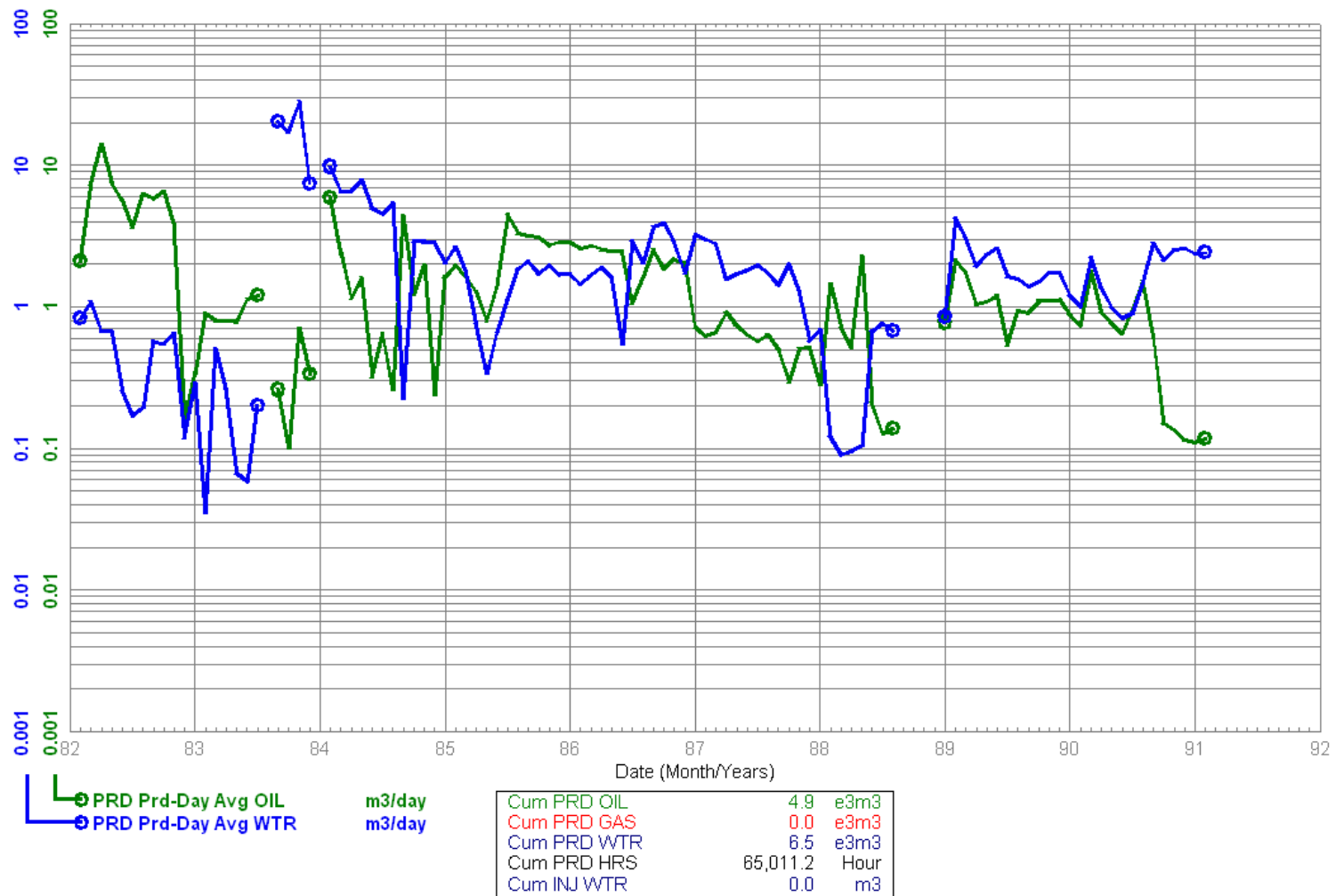
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 1991-02

100/09-25-001-26W1/00
 Waskada Unit No. 1
 Abandoned Producer

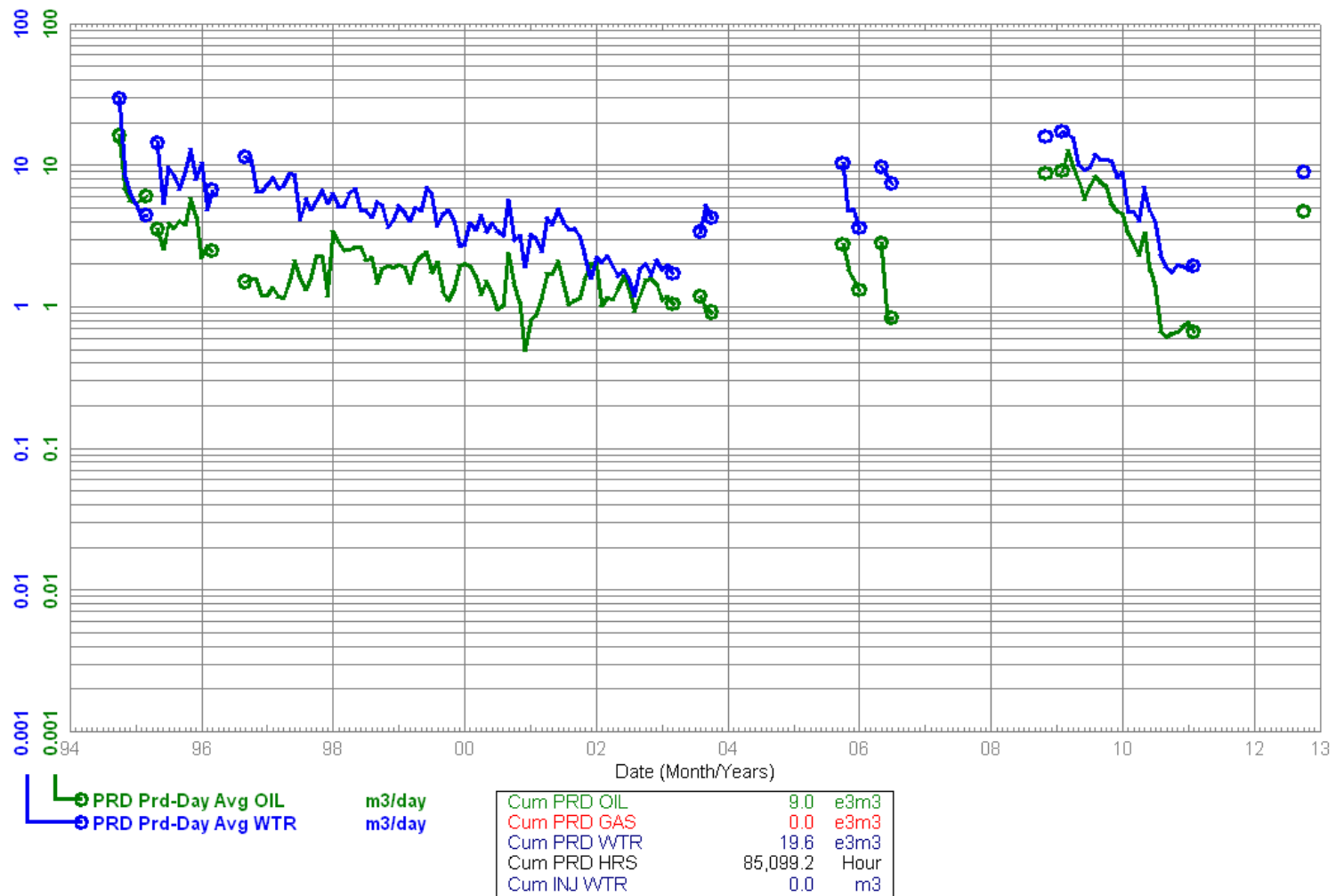
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1994-10
 To: 2012-10

102/09-25-001-26W1/00
 Waskada LA Unit No. 1 HZNTL
 Capable Of Oil Prod

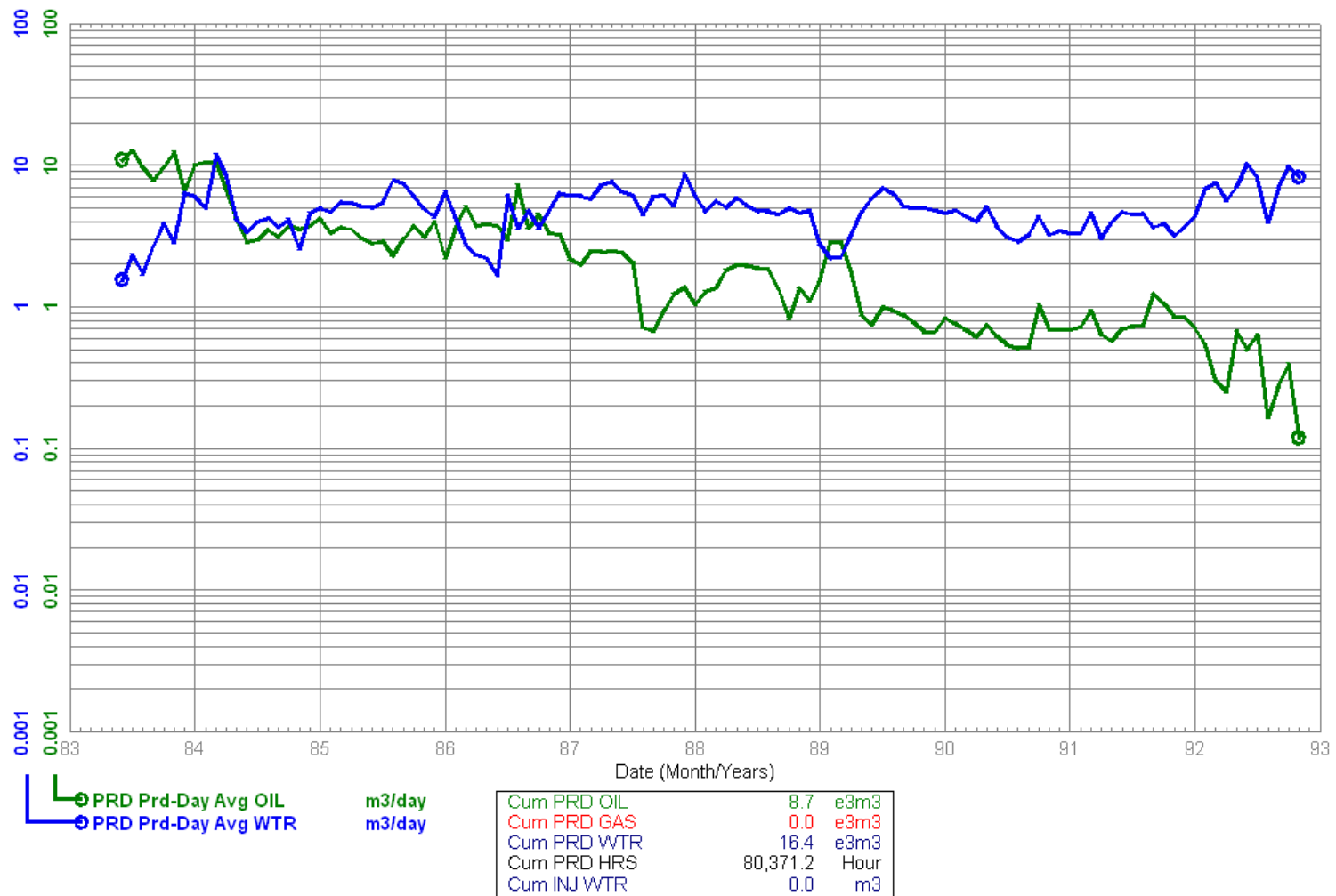
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1983-06
 To: 1992-11

102/10-23-001-26W1/00
 Waskada LAm Unit No. 1
 Abandoned Producer

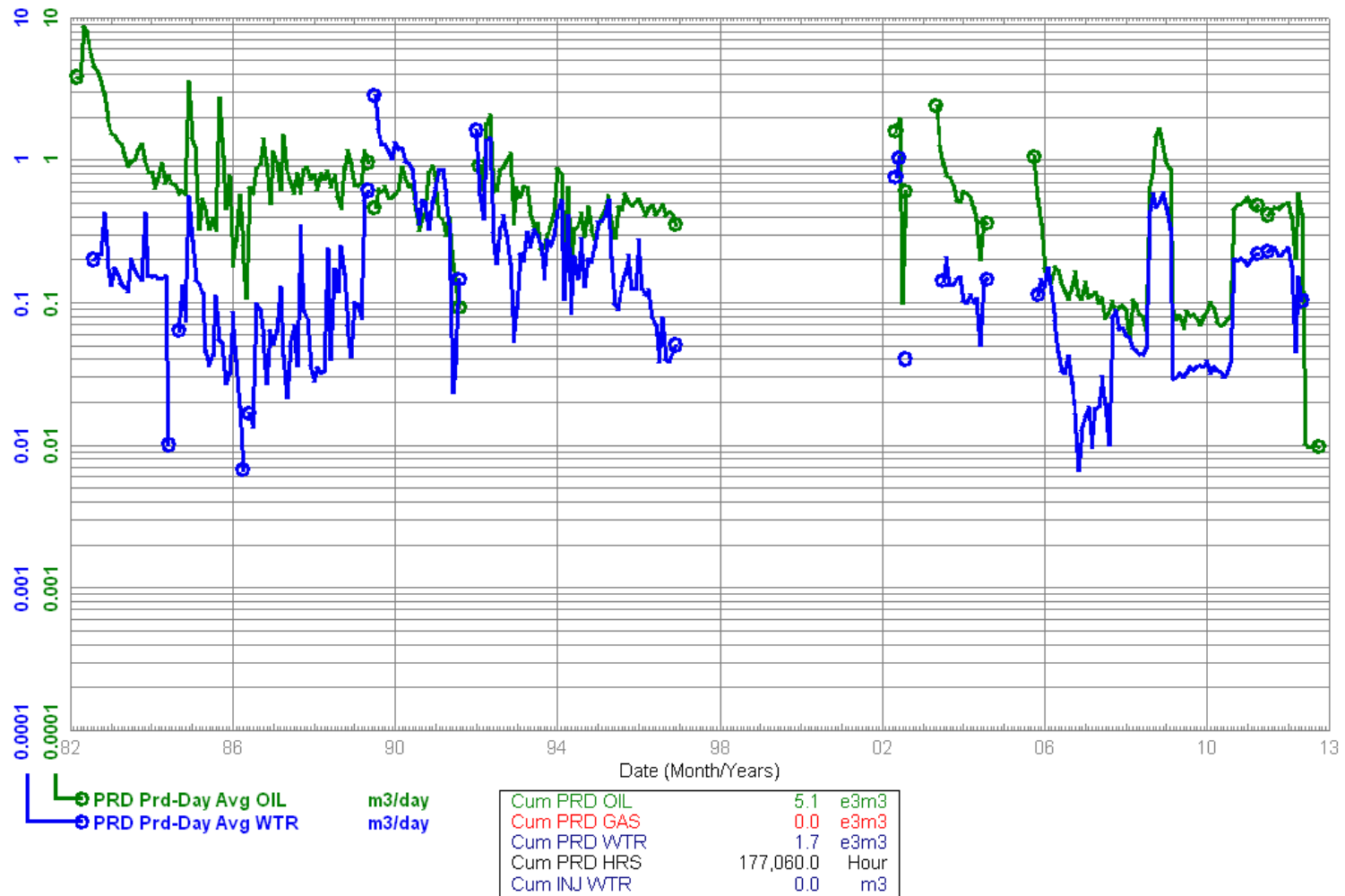
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-03
 To: 2012-10

100/10-24-001-26W1/00
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

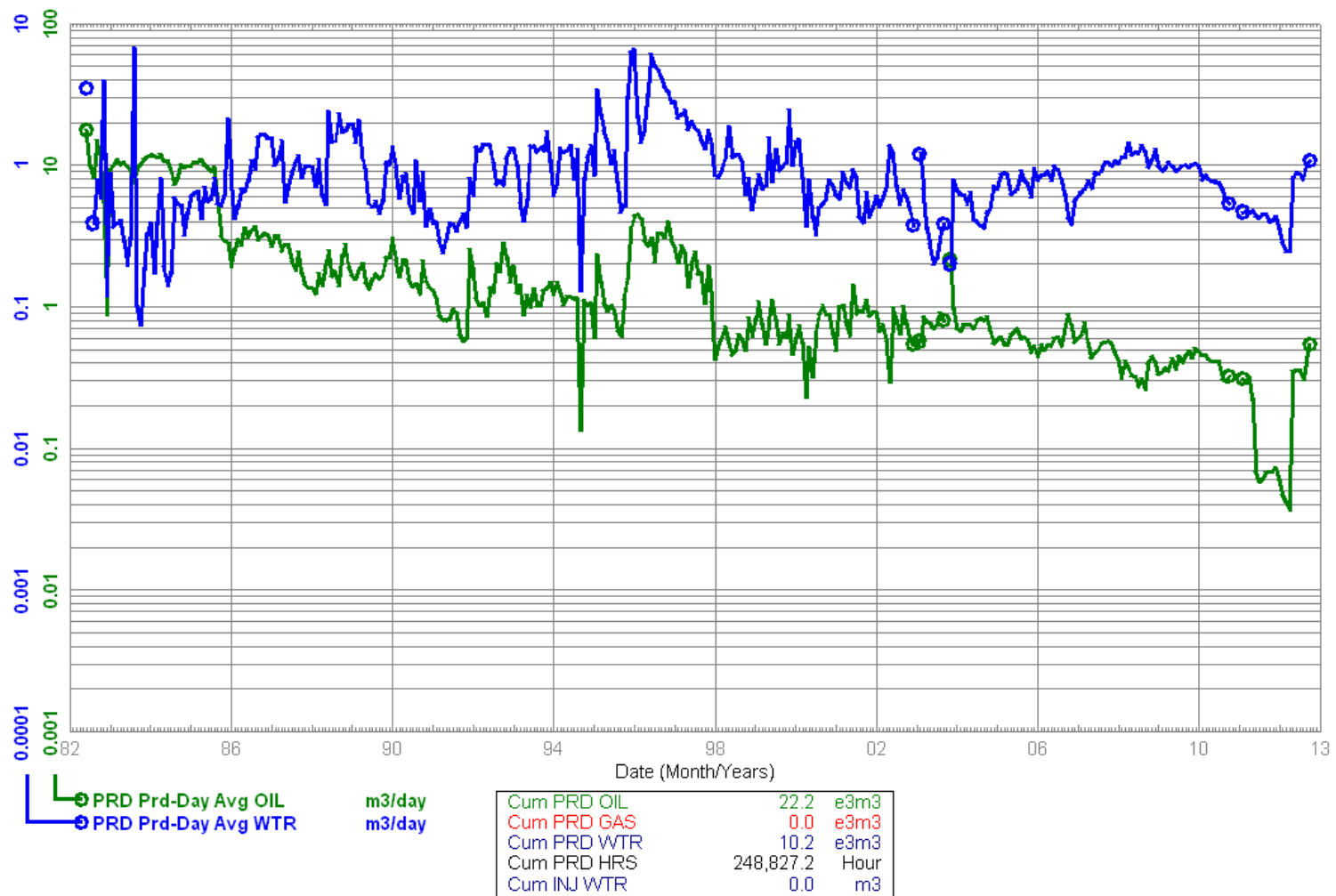
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-06
 To: 2012-10

100/10-25-001-26W1/00
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

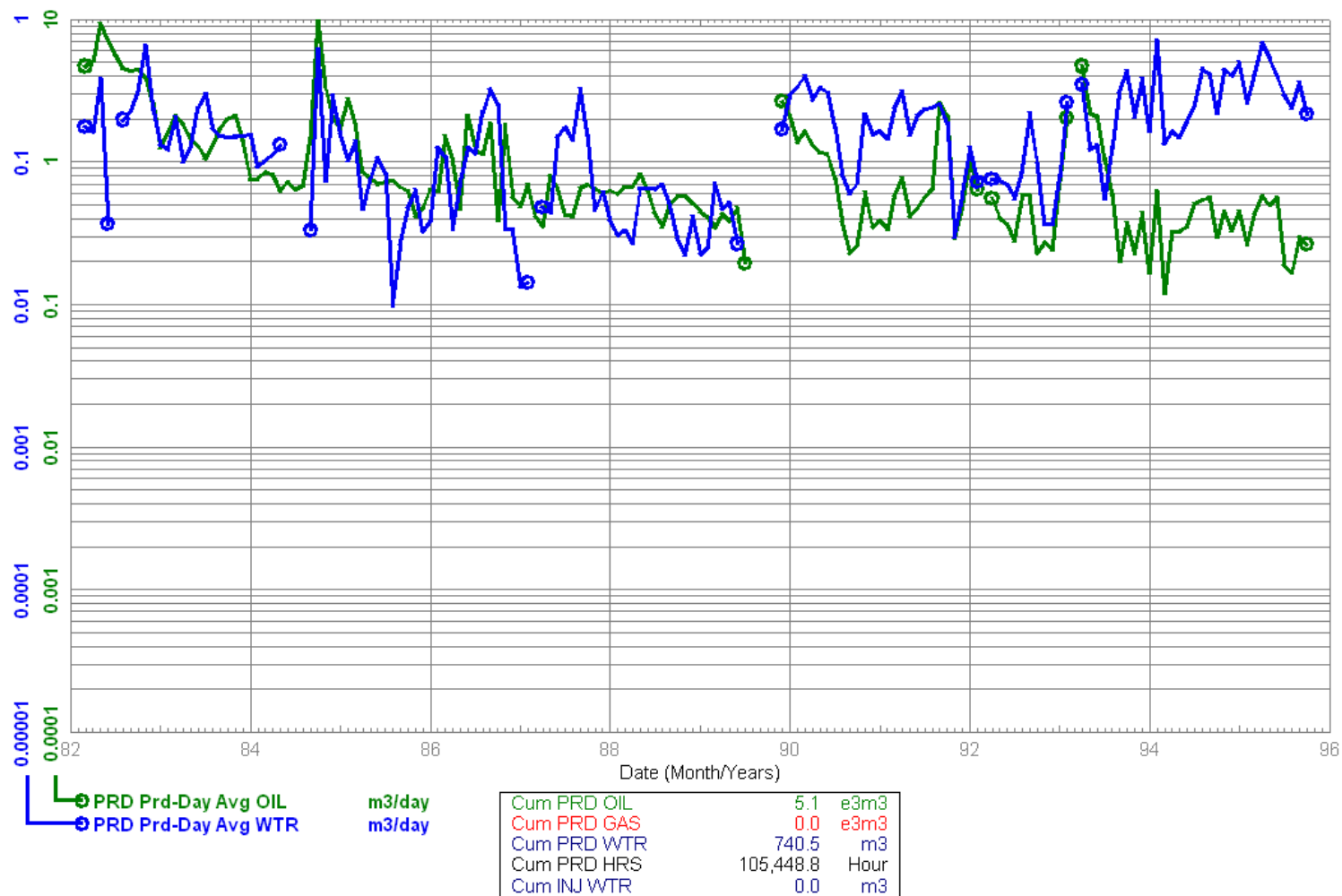
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-03
 To: 1995-10

100/11-24-001-26W1/00
 Waskada LA Unit No. 1
 Abandoned Producer

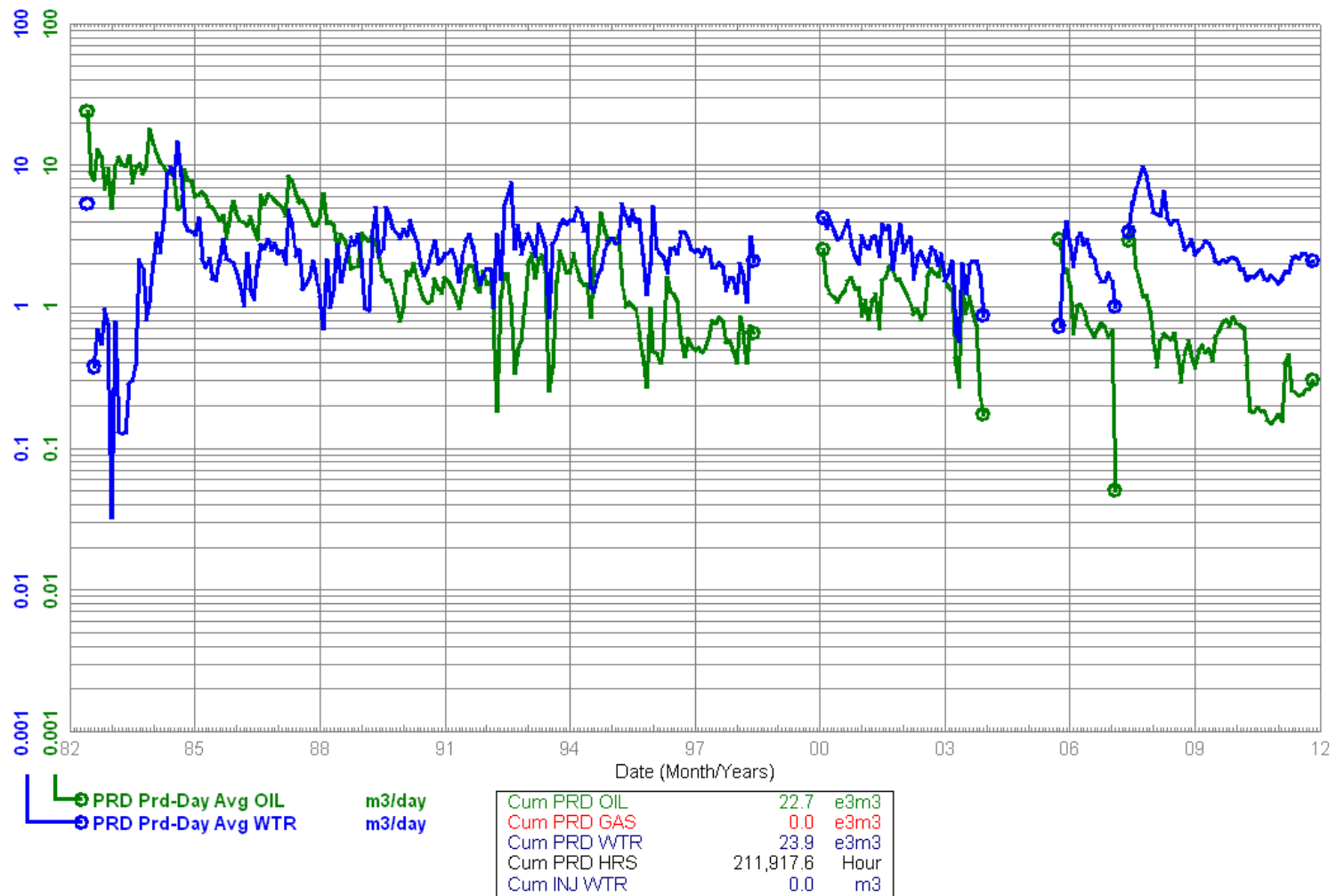
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-06
 To: 2011-11

100/11-25-001-26W1/00
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

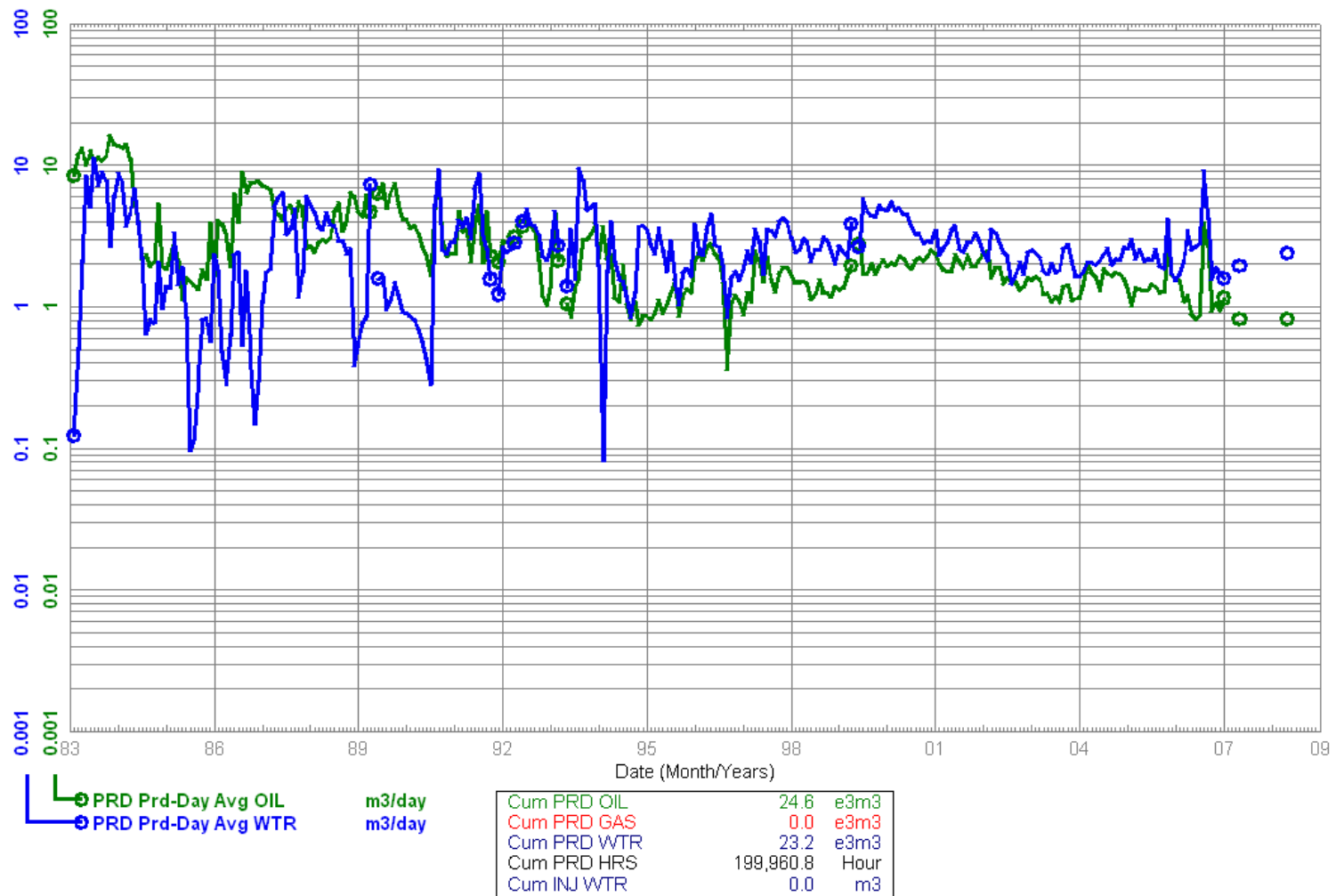
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1983-02
To: 2008-05

100/12-24-001-26W1/02
Waskada Unit No. 12 COM
Comingled

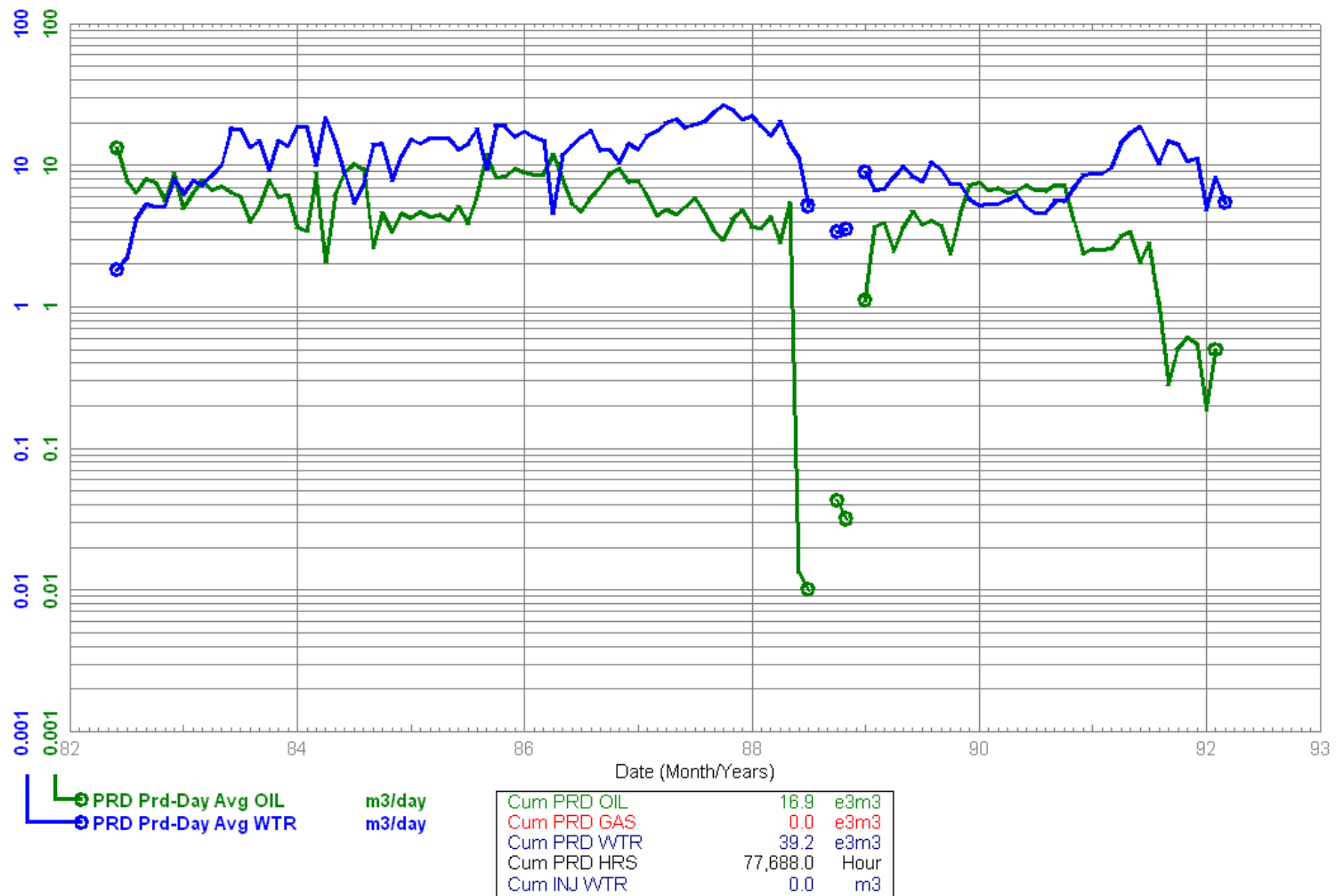
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-06
 To: 1992-03

100/12-25-001-26W1/00
 Waskada LAm Unit No. 1
 Abandoned Producer

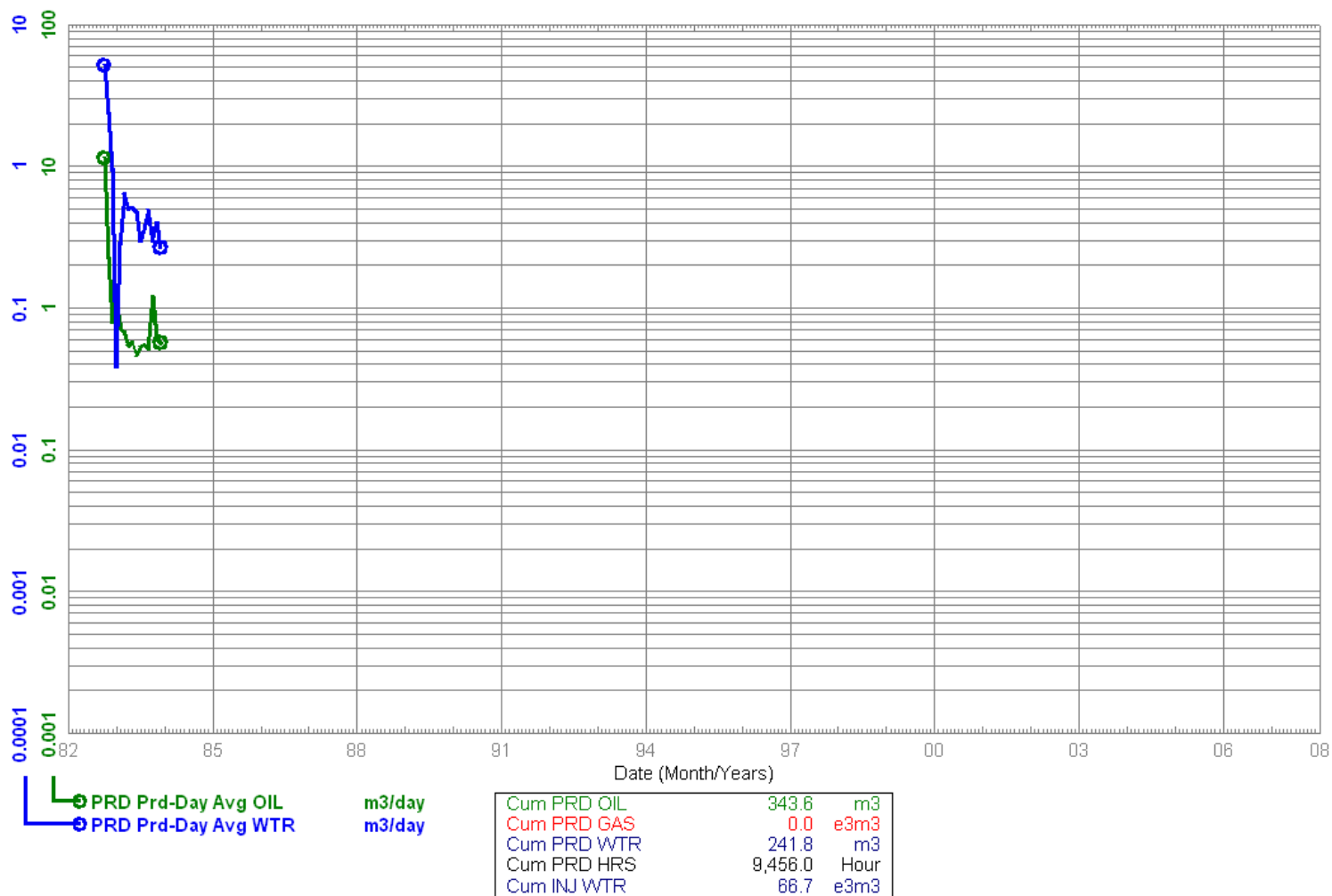
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-10
 To: 1983-12

100/13-25-001-26W1/00
 Waskada LAm Unit No. 1 WIW
 Water Inj Well

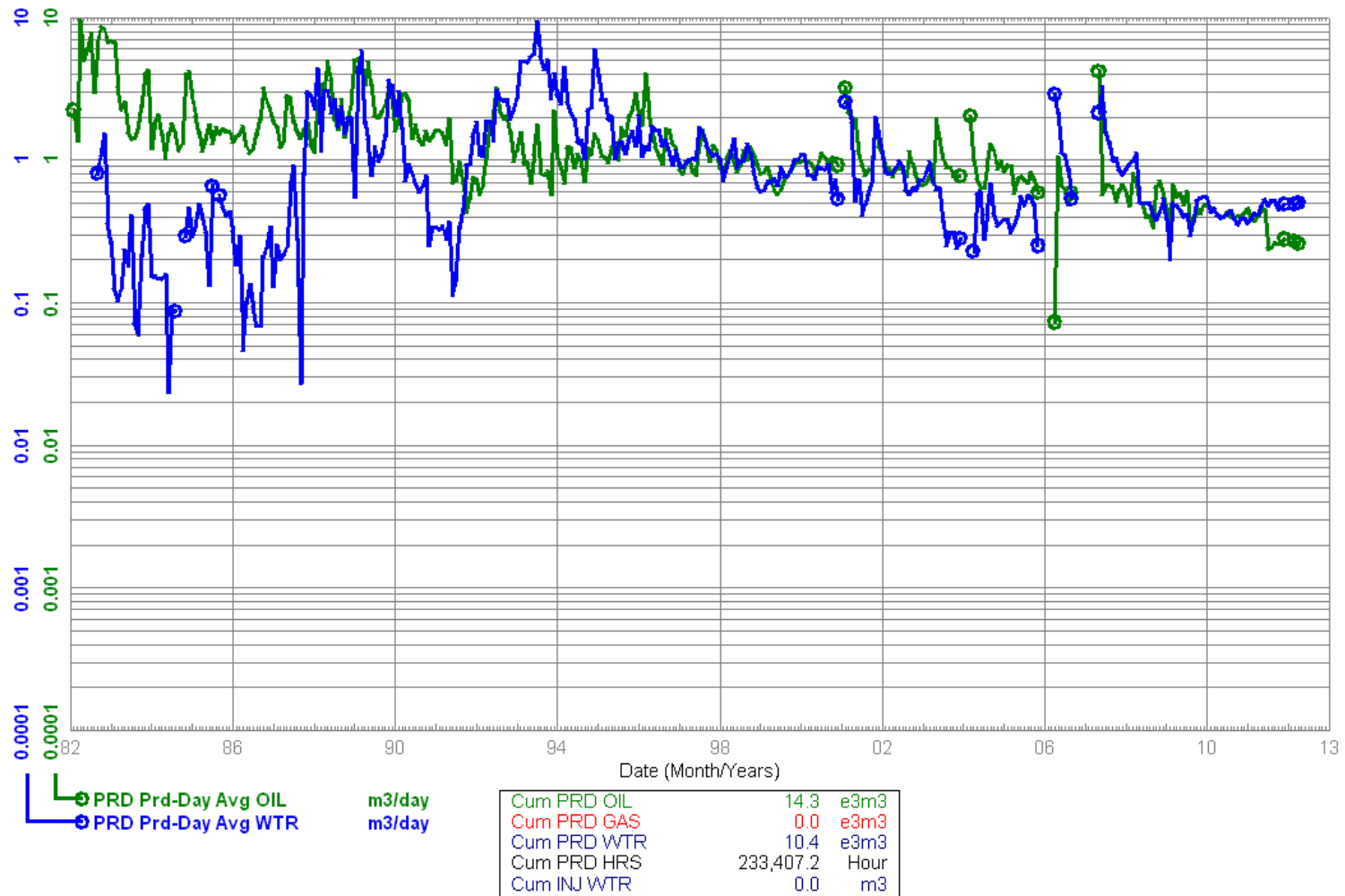
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-02
To: 2012-04

100/14-24-001-26W1/00
Waskada LAm Unit No. 1
Capable Of Oil Prod

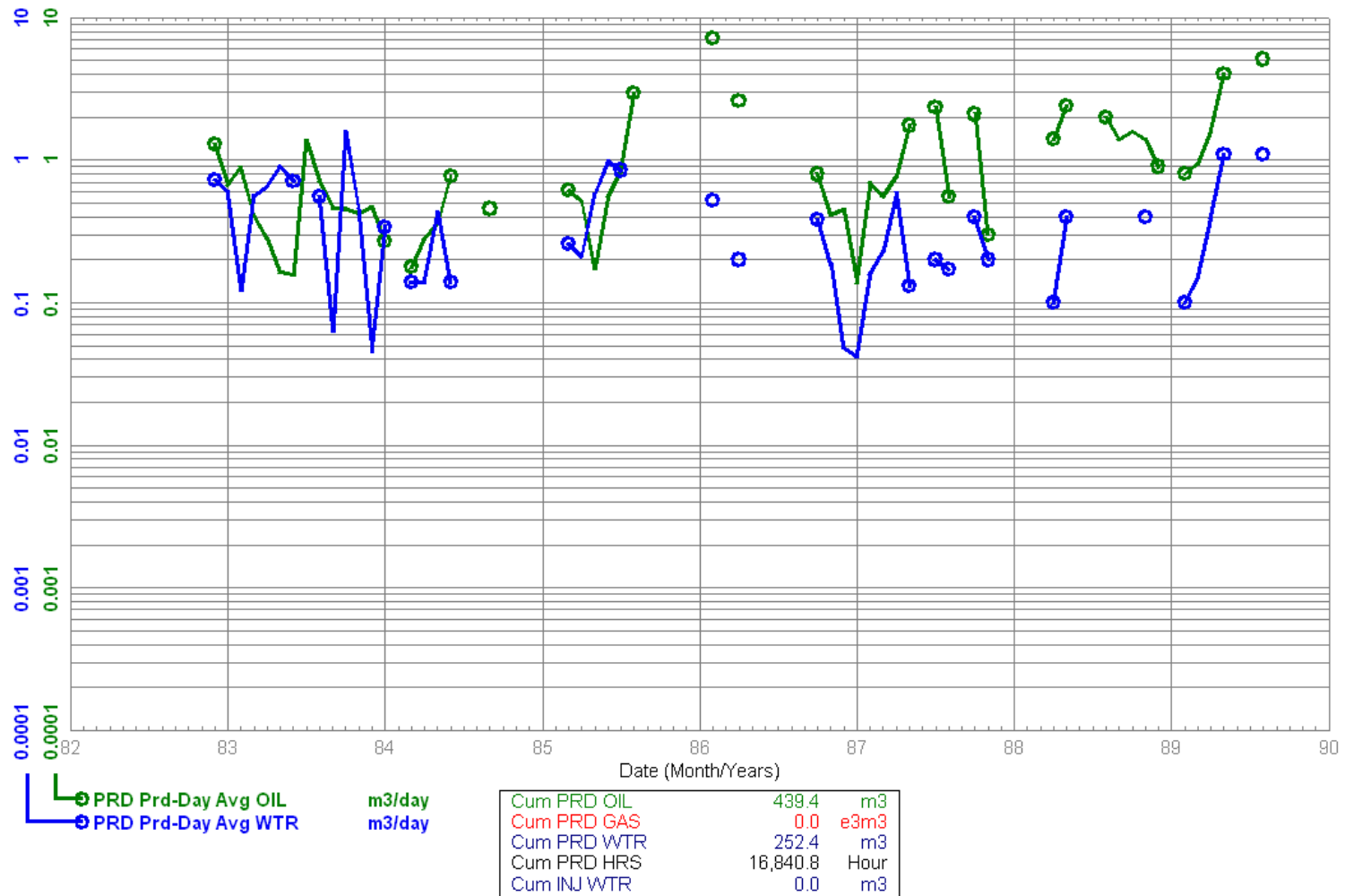
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-12
 To: 1989-08

100/14-25-001-26W1/00
 Omega Waskada
 Abandoned Producer

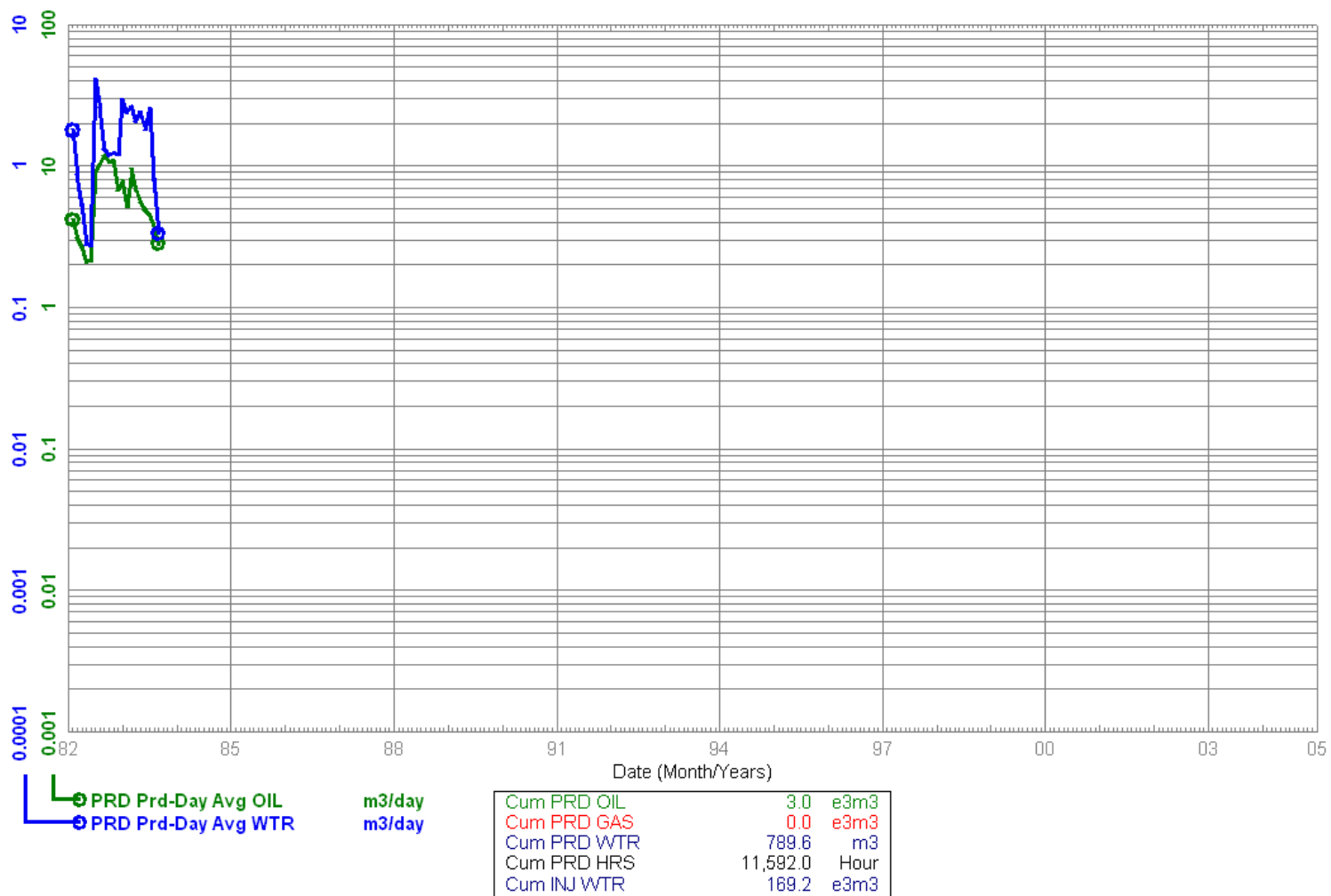
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 1983-09

100/15-23-001-26W1/00
 Waskada LAm Unit No. 1 WIW
 Water Inj Well

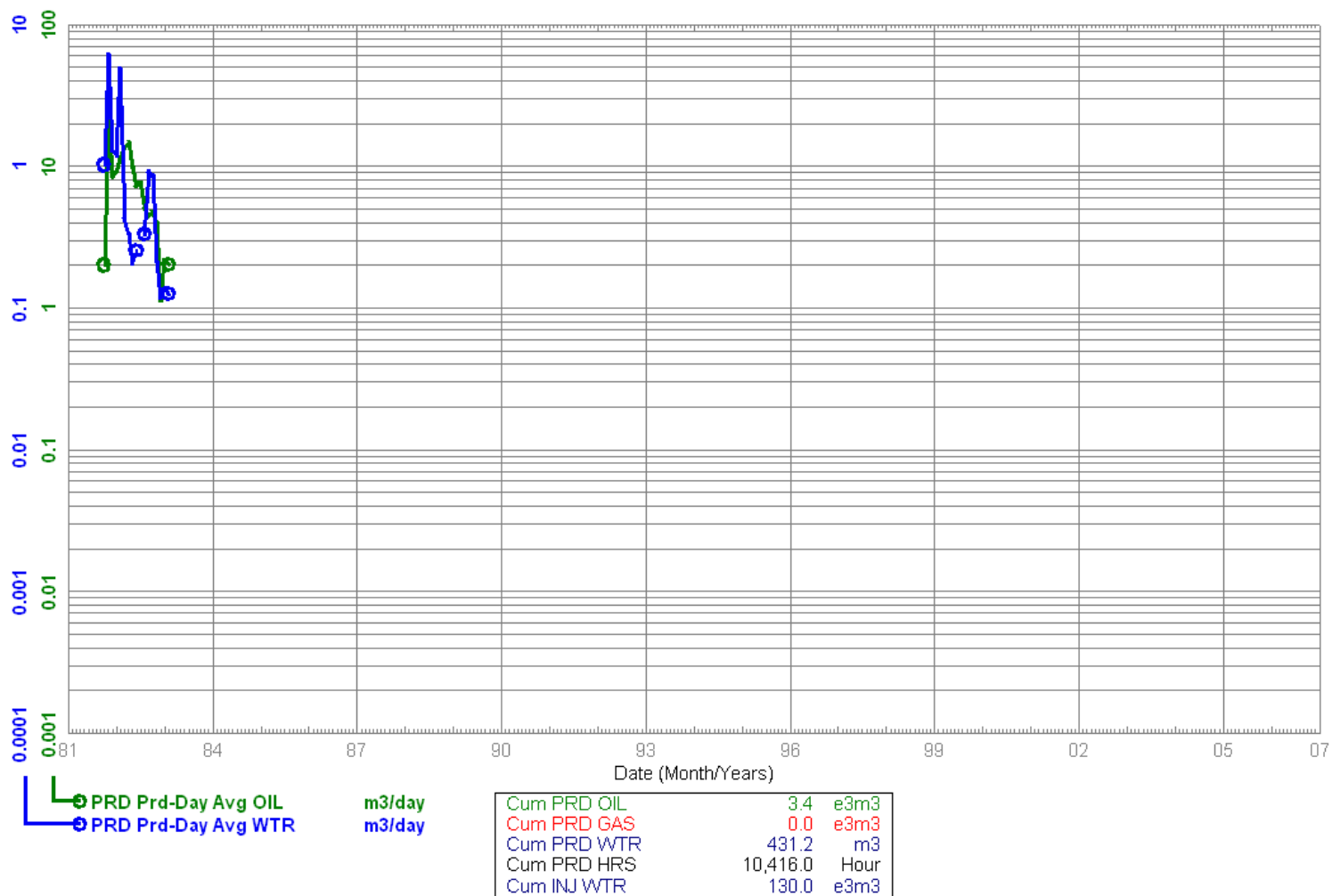
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1981-10
 To: 1983-02

100/15-24-001-26W1/00
 Waskada LAm Unit No. 1 WIW
 Water Inj Well

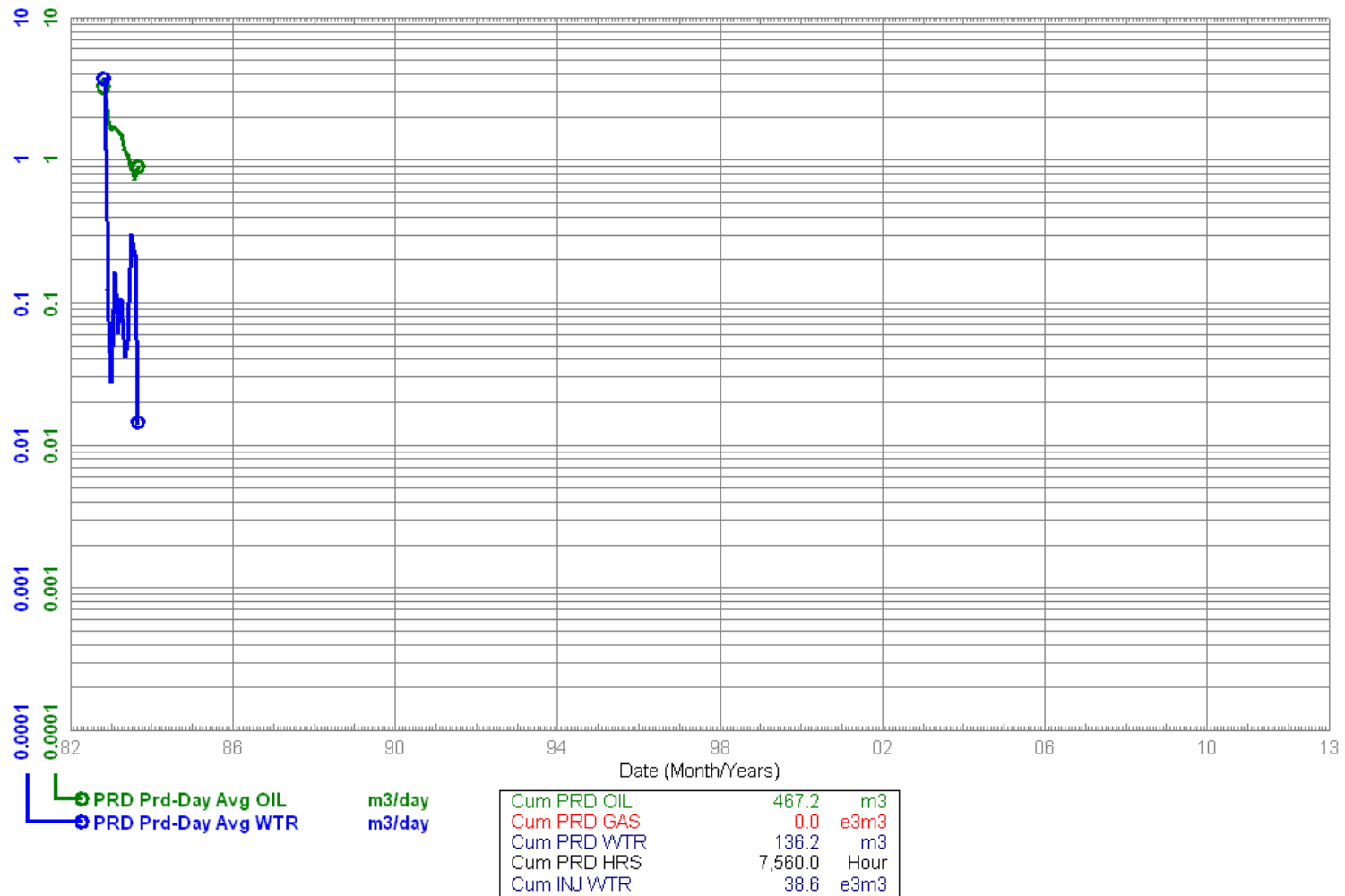
Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1982-11
To: 1983-09

100/15-25-001-26W1/00
Waskada LA Unit No. 1 WIW
Water Inj Well

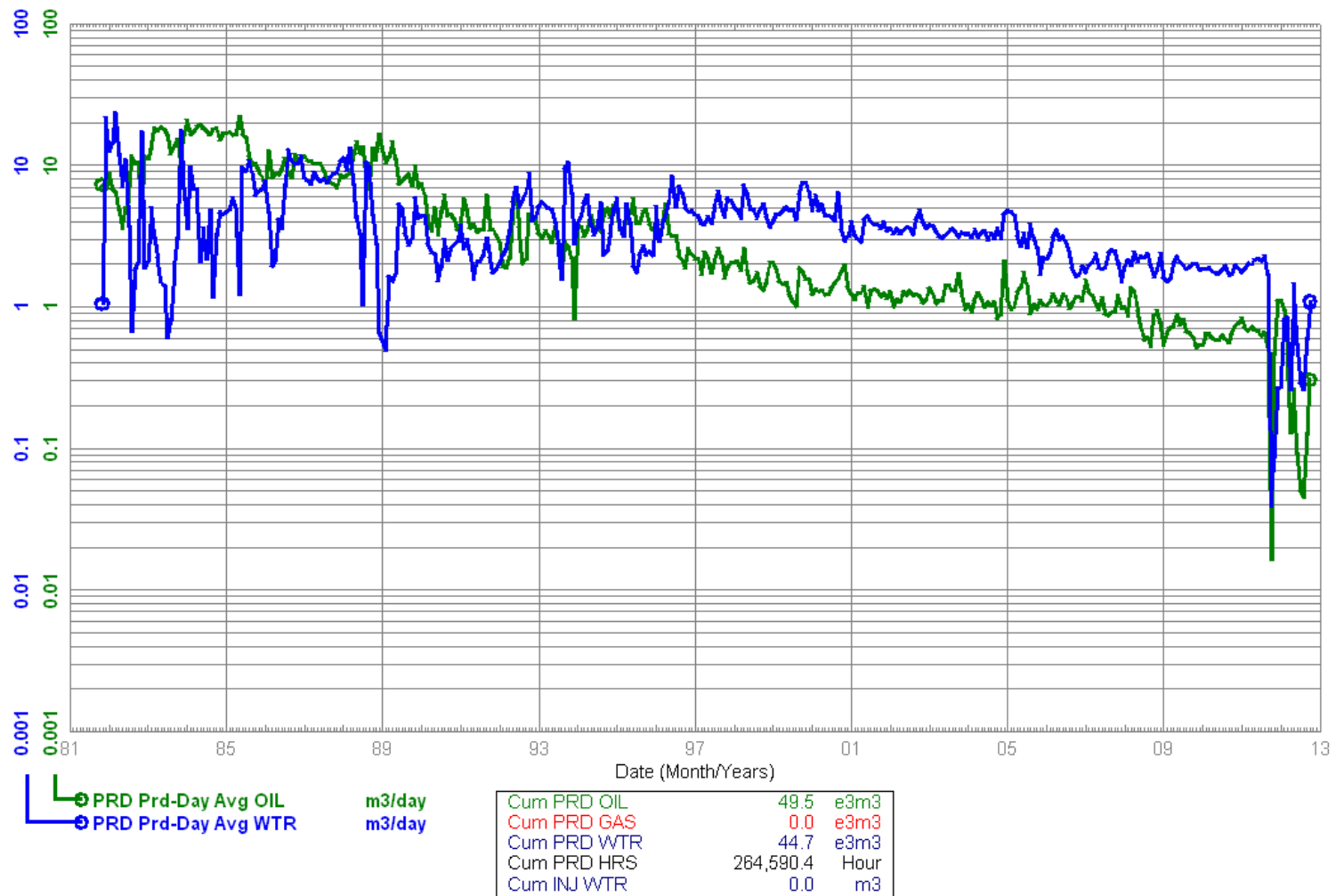
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
From: 1981-11
To: 2012-10

100/16-23-001-26W1/00
Waskada LAm Unit No. 1
Capable Of Oil Prod

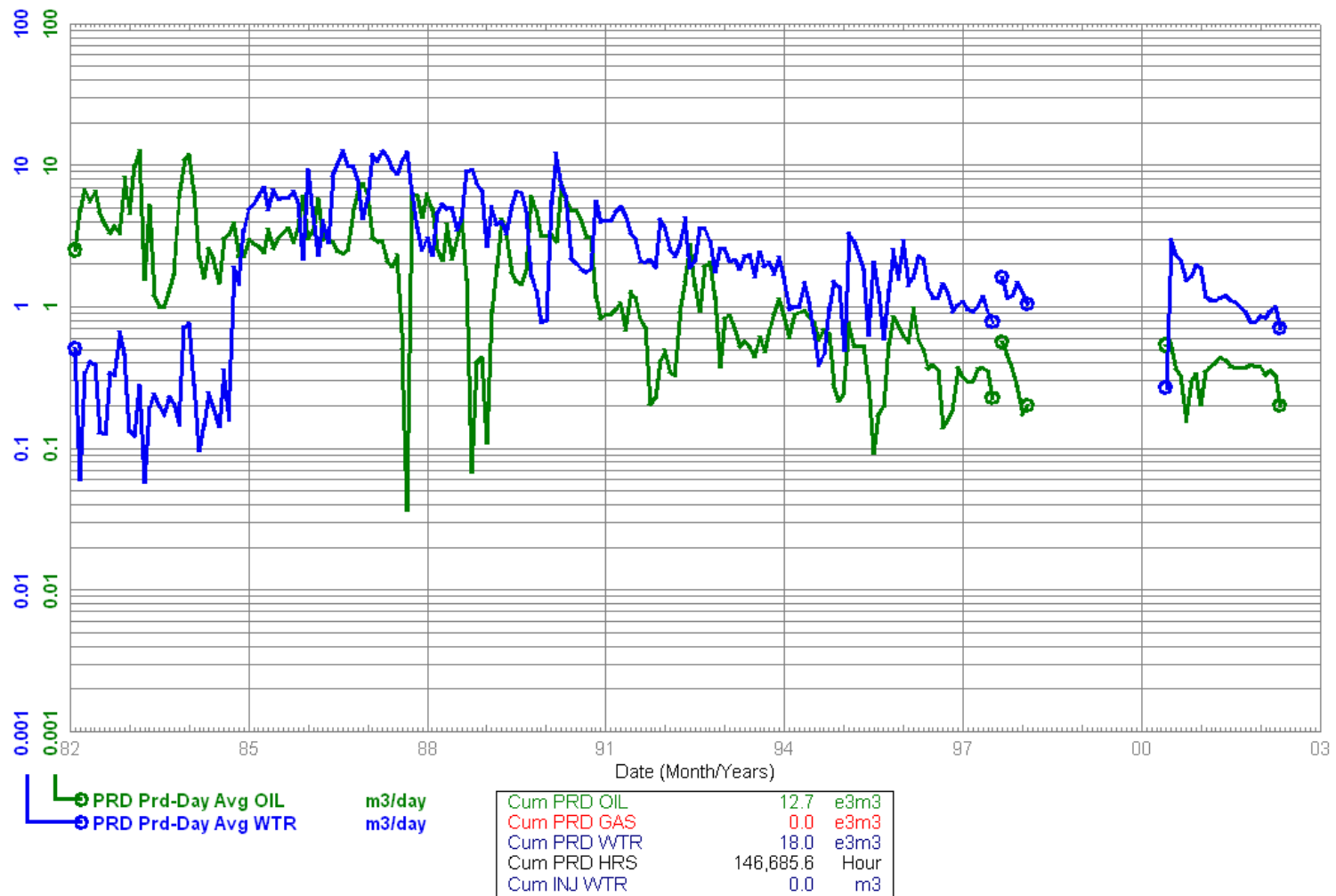
Field: WASKADA (03)
Pool: LOWER AMARANTH A (29A)
Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-02
 To: 2002-05

102/16-24-001-26W1/00
 Waskada LAm Unit No. 1
 Abandoned Producer

Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1



Data As Of: 2012-10 (MB)
 From: 1982-10
 To: 2008-09

100/16-25-001-26W1/00
 Waskada LAm Unit No. 1
 Capable Of Oil Prod

Field: WASKADA (03)
 Pool: LOWER AMARANTH A (29A)
 Unit: WASKADA LOWER AMARANTH UNIT NO. 1

