

IHS > Critical Information

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# Pennsylvania Production File

September 2009

Revised July 2014



**The Source** for Critical Information and Insight™



Pennsylvania Production File  
September 2009

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## Introduction

IHS released its Pennsylvania Production File in 2009 and updates it semi-annually. This document describes several key features about the Pennsylvania production data, including updated information about the production data for Marcellus and other horizontal wells.

## Key Points about Pennsylvania Production from IHS

- Pennsylvania production is reported on a semi-annual basis for Marcellus (and other unconventional horizontal) wells and on an annual basis for all other wells. IHS derives monthly volumes by dividing the Marcellus volumes by 6 months and other wells by 12 months. For wells that start during the reporting period, IHS will use the completion date to adjust the “starting month” for the production.
- The production volumes for Marcellus and other unconventional wells are released semi-annually and have no confidential period. The typical lag time from last production month to release of the volumes by the PA DEP is 2 - 3 months.
- Production volumes for all other wells are reported annually. The typical lag time from last production month in December to release of the volumes by the PA DEP is 3 – 4 months.
- IHS provides estimated beginning cumulative production for wells completed prior to the first reported production to Pennsylvania. This paper describes how these estimated beginning cumulatives were created.
- IHS well data was integrated to add Initial Potential tests, perforations, total depth, and well latitude and longitude coordinates.
- Approximately 6,000 production entities do not have an associated well in the IHS well file. The lack of an IHS well for an entity is due to Pennsylvania not carrying a well associated with the production.

## File Sources

The Pennsylvania Production File is built from 3 sources: (1) a source file from the Pennsylvania Department of Environmental Protection; (2) IHS' well file and (3) an independent source file from Hatgelakas Consulting Company.

The Pennsylvania production data starts in 1980 and reports annual volumes. At the time of this revision in July 2014, the Marcellus/Unconventional production is updated through December 2013 and the other wells are updated through December 2013.

IHS believes that the Pennsylvania source file has more errors and omissions than for most other state's production files. States that collect taxes based on production are more rigorous than Pennsylvania in collecting accurate and complete production data from operators or pipelines. IHS is unable to estimate the amount of missing production, but believes it to be substantial.

IHS integrated data from its well file to provide initial potential tests, producing formations, perforations, well completion dates and total depths for many production entities.

IHS acquired a file of estimated production volumes from Hatgelakas Consulting Company based in Pittsburgh. The Hatgelakas file includes estimated monthly production volumes for the time between the date of well completion date and the first year when an operator first reported production to Pennsylvania. See the section of this report on "Estimated Beginning Cumulatives" for more information on the Hatgelakas file.

## Monthly Production

Monthly production is reported at the well level from January 1980 to current. The volumes are derived from dividing the annual production volume by 12. This derivation of monthly volumes results in a “stair-step” production decline curve.

The “Days On” production per month is also derived from an annual figure. IHS divides the annual number of producing days by 12. Note: The “Days On” is likely not constant over a year, but IHS has no way to know when a well is producing and when a well is shut-in.

Monthly Production							
Date	Oil	Gas	Water	Cond Yld	% Water	# of	Days
MO/YR	BBLs	MCF	BBLs	STB/MMCF		Wells	on
APR 2002		108	72			1	8
MAY 2002		108	72			1	8
JUN 2002		108	72			1	8
JUL 2002		108	72			1	8
AUG 2002		107	72			1	8
SEP 2002		108	72			1	8
OCT 2002		107	73			1	9
NOV 2002		108	72			1	8
DEC 2002		107	73			1	9
Totals:							
2002		969	650				
JAN 2003		87	20			1	9
FEB 2003		87	20			1	9
MAR 2003		87	20			1	9
APR 2003		87	20			1	9
MAY 2003		88	20			1	9
JUN 2003		87	20			1	9
JUL 2003		88	20			1	9
AUG 2003		87	20			1	9
SEP 2003		88	20			1	9
OCT 2003		87	20			1	9
NOV 2003		88	20			1	8
DEC 2003		87	20			1	9
Totals:							

Annual Numbers divided by 12

**Figure 1. Example of Monthly Production estimated from Annual production.** This well produced 969 MCF of gas in 2002. The well was completed in April 2002 and the annual production is equally divided in the 9 months of April through December. The “Days On Production” for the year also was equally divided for these months.

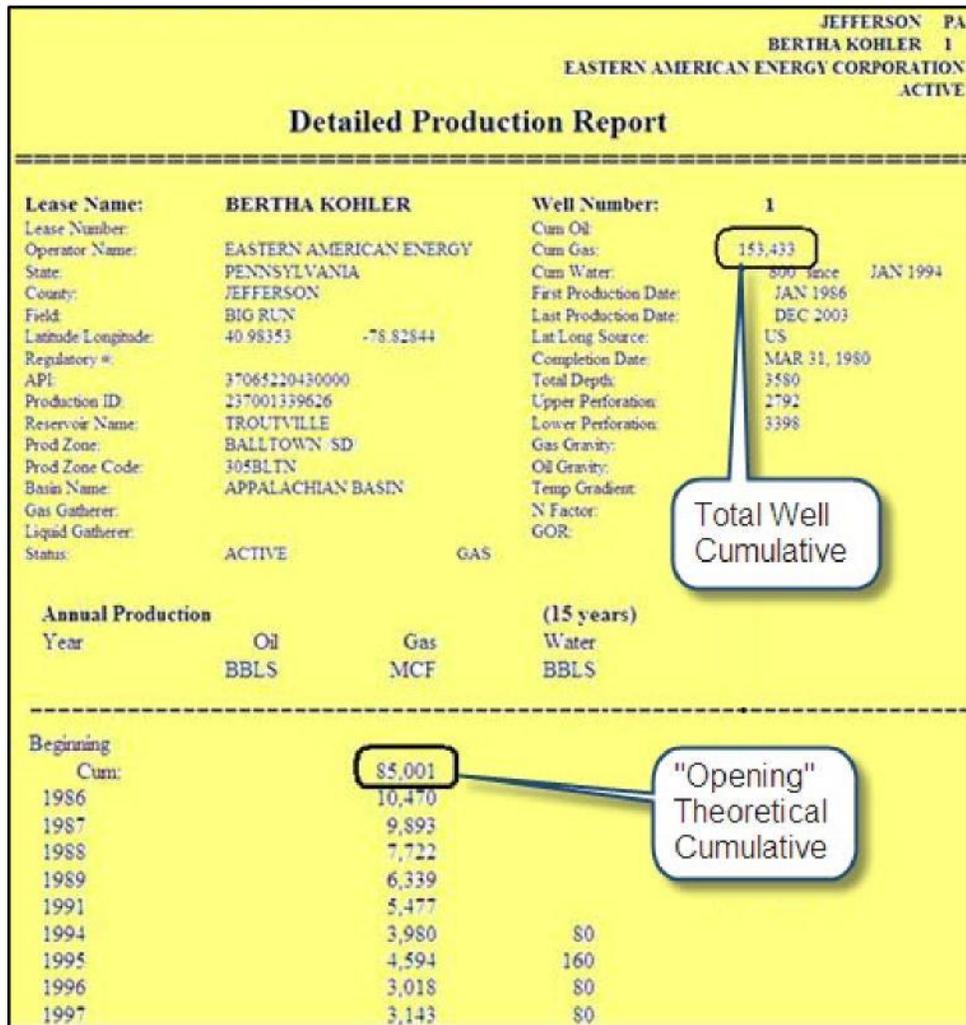
## Estimated Beginning Cumulative Production from Type Curve Analysis

Monthly or cumulative production prior to 1980 is not accessible from Pennsylvania. Many customers want to be able to calculate an Estimated Ultimate Recovery (EUR) for a well, but the lack of pre-1980 production makes this very difficult. For some wells, the Pennsylvania source file is missing volumes for since 1980 when the well likely produced but the operator did not report the volumes.

IHS obtained a file of estimated production volumes created by Peter Hatgelakas of Hatgelakas Consulting. Using his engineering expertise for Appalachian Basin reservoirs, Mr. Hatgelakas calculated the duration of time from the initial completion date to the first published production event and matches the actual curve to a reservoir “type-curve” because the “type-curves” are

reservoir dependent. He then back calculates (“back-casts”) the prior production based on the curve and adds that value to the published production with the resulting number being the theoretical cumulative gas production for a well.

IHS has used these estimated volumes generated by Hatgelakas Consulting to create an **estimated beginning Cumulative** to help customers create an approximate EUR for wells. **Customers must recognize that this is an estimated beginning cumulative and not an actual produced volume.**

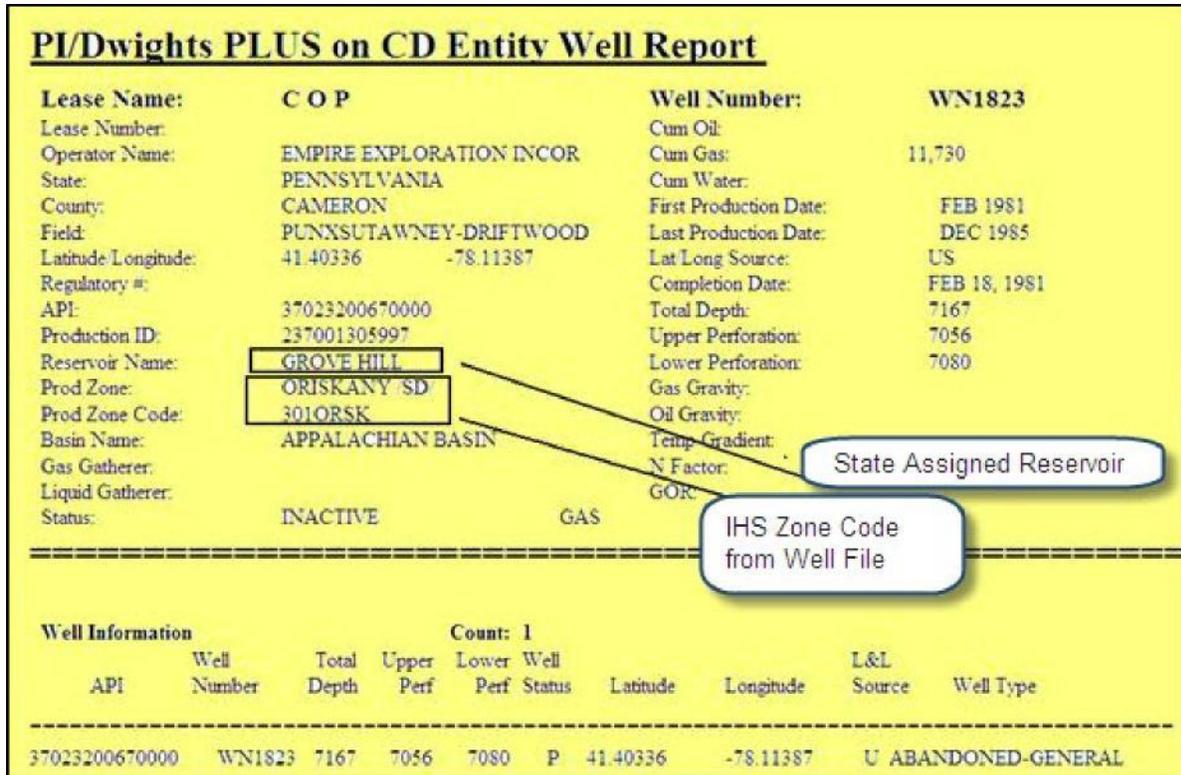


**Figure 2. An example of Estimated Beginning Cumulative.** Hatgelakas Consulting used type-curves for this well to determine the estimated production prior to 1986. A type-curve of the Balltown Sand production is used to “back-cast” production volumes between the well completions from March 1980 to first reported production in 1986.

## Formation & Reservoirs

Many production entities in Pennsylvania are reported with a reservoir name that is a “local call”, not a geologic formation name. IHS has researched well information to determine the appropriate formation for many of the local reservoir calls.

IHS assigns an 8-digit formation code or “zone code” to the producing formation. The first three bytes represent the age of the formation and the remaining five bytes will represent the mnemonic of the of the formation. For example, the 301ORSK represents the Oriskany.



**Figure 3. Example of IHS assigning a formation name.** IHS uses well information to relate the “Grove Hill” reservoir to the producing zone code of the Oriskany.

## Production Entities without Associated Well Data

IHS strives to match well and production information using an API number. However, the Pennsylvania production source file has more than 6,000 production entities without any associated well data. Operators reported production volumes but either never filed well information or well registrations for these wells, or Pennsylvania has not processed the information.

IHS used Pennsylvania’s master list of permits to capture operator name, well name and number and the permit number for the 6,000 entities without well data header information. These production entities do not have total depth values and do not have any location or

latitude/longitude data. Without a latitude and longitude coordinate, these production entities will not plot on your maps. *Update: IHS has reviewed the PA DEP regional office files and found no well documentation for these wells that formerly “produced” and are in the PA DEP production file.*

## IP Test Information

Production or IP Test information is not available through any state data source. By using our Well data file, IHS has inserted 15,341 IP test onto our Pennsylvania Production file.

PI/Dwights PLUS on CD Detailed Well Test Report															
Lease Name:	C O P			Well Number:	WN1823										
Lease Number:				Cum Oil:											
Operator Name:	EMPIRE EXPLORATION INCOR			Cum Gas:	11,730										
State:	PENNSYLVANIA			Cum Water:											
County:	CAMERON			First Production Date:	FEB 1981										
Field:	PUNNSUTAWNEY-DRIFTWOOD			Last Production Date:	DEC 1985										
Latitude Longitude:	41.40336 -78.11387			Lat Long Source:	US										
Regulatory #:				Completion Date:	FEB 18, 1981										
API:	37023200670000			Total Depth:	7167										
Production ID:	237001305997			Upper Perforation:	7056										
Reservoir Name:	GROVE HILL			Lower Perforation:	7080										
Prod Zone:	ORISKANY SD			Gas Gravity:											
Prod Zone Code:	301ORSK			Oil Gravity:											
Basin Name:	APPALACHIAN BASIN			Temp Gradient:											
Gas Gatherer:				N Factor:											
Liquid Gatherer:				GOR:											
Status:	INACTIVE			GAS											
=====															
Gas Tests															
Total count: 1															
API Number	Well Number	Test Type	Test Date	Upper Perf	Lower Perf	Cum Prod To Test	WHSIP	WHFP	BHP	BHP 2	BHP Type	Water BD	Cond BD	Gas MCFD	AOF MCFD
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First Test	37023200670000	WN1823	IP 19810218	7056	7080	45								335	

IP Test from IHS Well File

## Data Support

Please contact [production.data@ihs.com](mailto:production.data@ihs.com) with questions about this paper or with any issues about specific wells.