



## Potential Impact of Hurricane Katrina on Gulf of Mexico Oil and Gas Production

September 1, 2005

Monday morning, shortly before hitting Louisiana, Mississippi and Alabama, Hurricane Katrina crossed the Gulf of Mexico, encountering dozens of major oil and gas fields. Today, the US Minerals Management Service (MMS) estimates that 92%, or 1.4 million barrels a day of Gulf oil production, has been temporarily shut-in. Approximately 84% of the region's gas production, or 8.4 billion cubic feet a day is also offline.

Much of the capacity presently shut-in will be quickly restored as facilities unaffected by the storm are inspected, re-manned and brought back online. The greatest concerns are over the fields, facilities and pipelines closest to the hurricane's path.

By the time it made landfall in Burris, LA on Monday morning, Katrina had measured sustained winds of 135 miles per hour (mph). In previous hurricanes in the Gulf, wind speed declined at approximately 1 mph for every mile away from the storm track. To gauge the potential impact on production and its incidence across operators, Earth Science Associates prepared two maps using its *GOM*<sup>3</sup> geographic information system (GIS).

Two buffers were placed around the hurricane's path, at 30 miles and at 60 miles – approximately the bands where winds could be expected in the > 100 mph and 60-100 mph ranges, respectively. These buffers were intersected with producing fields in the Gulf of Mexico. The hurricane path, 30- and 60-mile buffers and fields are shown in Maps 1 (gas) and 2 (oil). Oil and gas fields are shown with the sizes of the circles reflecting each field's 2004 production.

Approximately 556,000 barrels of oil per day (bopd) were produced in 2004 from fields within 60 miles of the hurricane path. This represents 38% of the Gulf's 2004 oil production (Figure 1 and Table 1). Of that volume, 379,000 bopd was within 30 miles of the storm center. Additionally, 2 billion cubic feet per day (bcfpd) of 2004 gas production was within 60 miles of the storm track (about 20% of Gulf gas production); of this volume, approximately one-half was within 30 miles of the storm. Both oil and gas volumes at risk represent a small fraction of US supplies.

Of the several hundred companies that operate oil and gas wells in the Gulf of Mexico, production in the most severely affected areas was concentrated among a few (Table 2 and Figure 3). As measured by 2004 production, the largest operator within 30 and 60 miles from the storm track was Shell.

This analysis does not imply that these volumes will be lost to present supply. However, using the recent annual production data and intersecting the locations of the fields with the track of the storm identifies productive capacity at most immediate risk from the storm's impact and the operators most likely to be hit.

The tables, figures and maps below may be used with credit to Earth Science Associates. The well production data is from the MMS; the storm track is from the National Weather Service and total GOM and US statistics from the Energy Information Administration. The analysis was done by Earth Science Associates in its *GOM*<sup>3</sup> geographic information system. JPEGs or other formats of the maps are available by emailing ESA.

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### Earth Science Associates

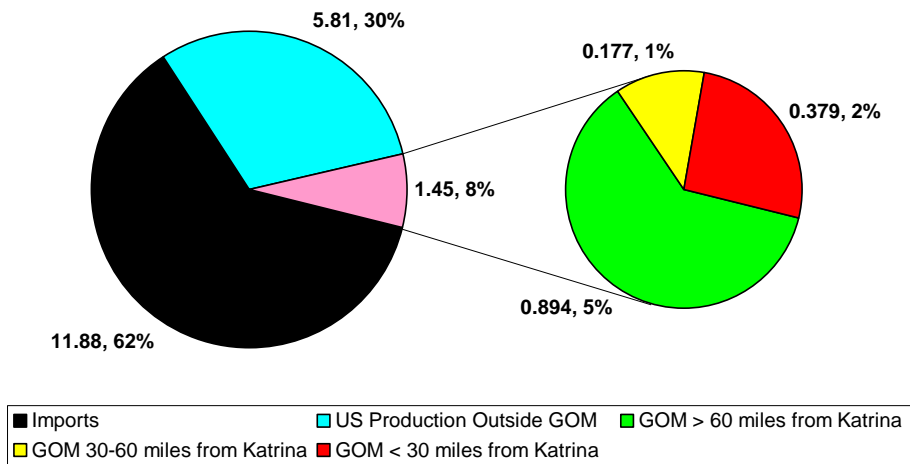
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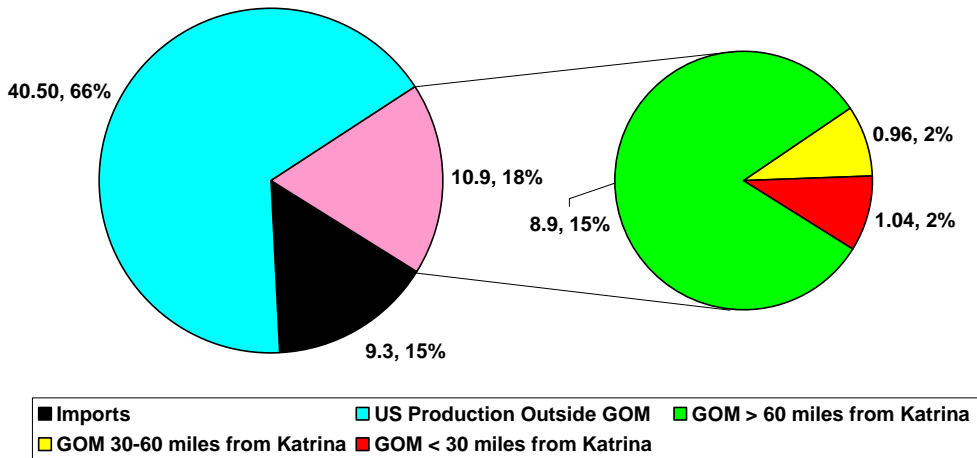
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**Figure 1**  
**Oil Production At Risk From Katrina in Context of US Supply**  
 (Values Are Oil 2004 Production in Millions of Barrels per Day and Percent of US Supply)



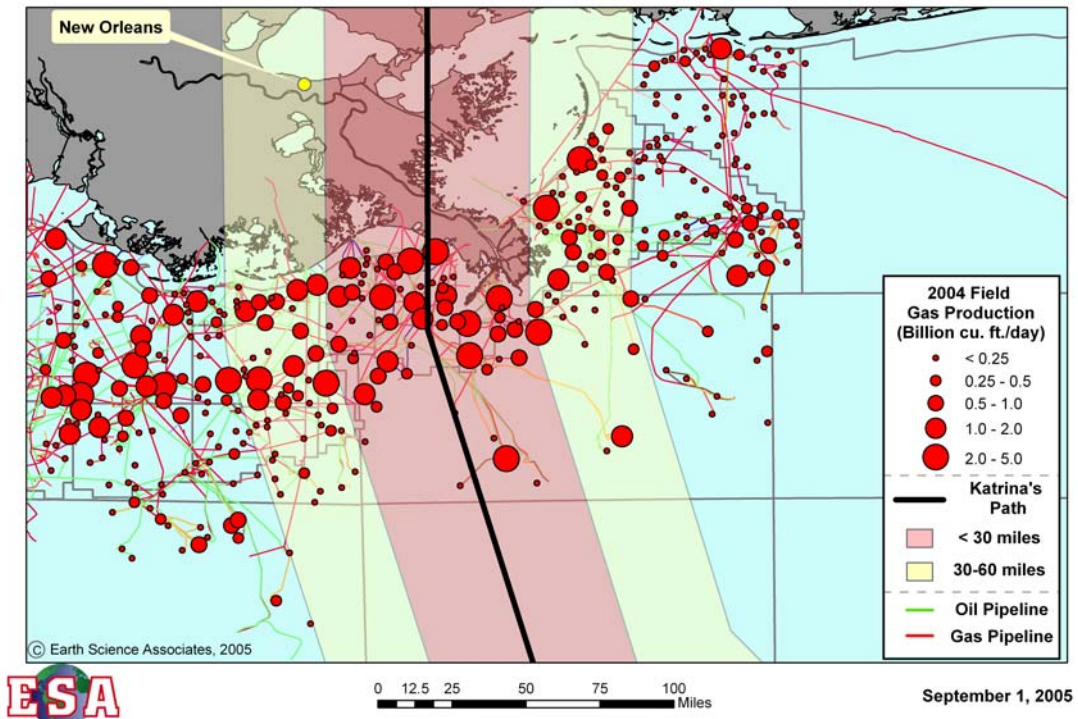
**Figure 2**  
**Gas Production At Risk From Katrina in Context of US Supply**  
 (Values Are Gas 2004 Production in Billions of Cubic Feet per Day and Percent of US Supply)



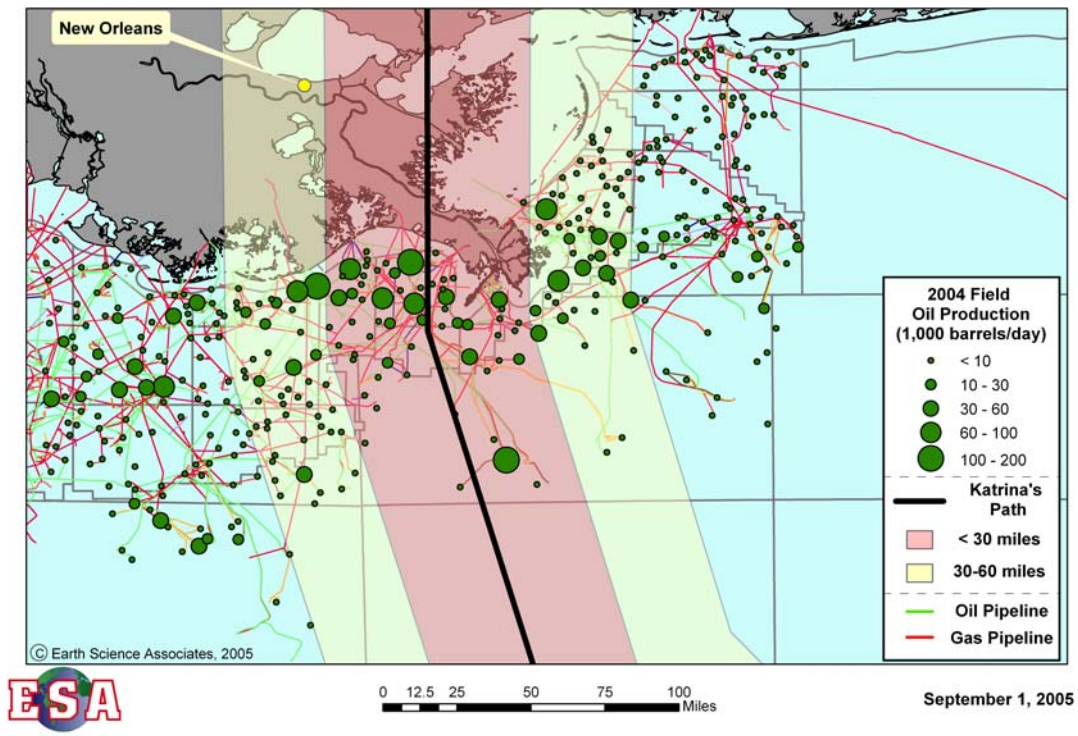
**Table 1**  
**Oil and Gas Production At Risk From Katrina in Context of US Supply**

	Total 2004 US		Total 2004 GOM Production	GOM 2004 Production Proximate to Hurricane Path	
	Consumption	Production		< 30 mi.	30-60 miles
<b>Oil (Million bopd)</b>	19.14	7.26	1.45	0.38	0.18
<b>Gas (bcfpd)</b>	60.70	51.40	10.90	0.96	1.04
<b>BOE (Million BOEpd)</b>	29.94	16.41	3.39	0.55	0.36

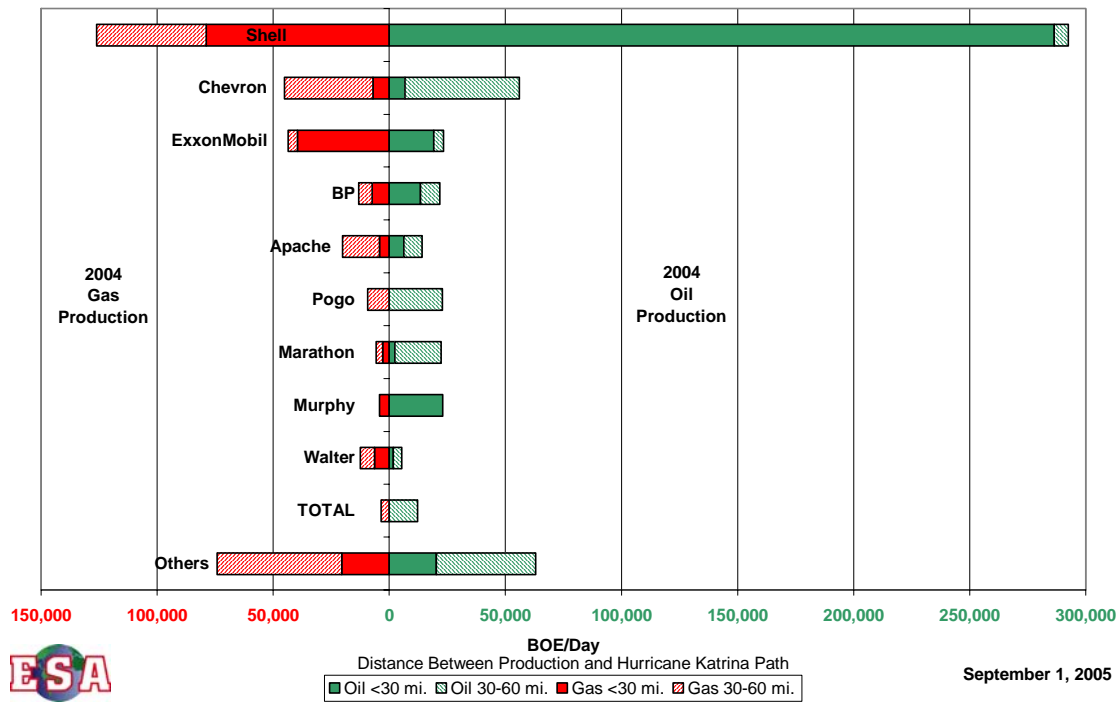
**Map 1**  
**2004 Gas Production in Relationship to Hurricane Katrina Path**



**Map 2**  
**2004 Oil Production in Relationship to Hurricane Katrina Path**



**Figure 3**  
**2004 Productive Capacity by Operator within 60 Miles of Hurricane Katrina Path**  
**(Barrels of Oil Equivalent (BOE) per Day)**



**Table 2**  
**2004 Productive Capacity by Operator within 60 Miles of Hurricane Katrina Path(Barrels of Oil Equivalent (BOE) per Day)**

	Oil <30 mi.	Oil 30-60 mi.	Gas <30 mi.	Gas 30-60 mi.
<b>Shell</b>	286,335	6,139	78,808	47,186
<b>Chevron</b>	6,813	49,221	7,112	38,036
<b>ExxonMobil</b>	19,201	4,179	39,466	4,095
<b>BP</b>	13,364	8,378	7,334	5,849
<b>Apache</b>	6,264	7,862	4,290	15,854
<b>Pogo</b>	-	22,790	-	9,292
<b>Marathon</b>	2,404	19,976	2,777	2,923
<b>Murphy</b>	22,951	-	4,330	-
<b>Walter</b>	1,754	3,665	6,347	6,051
<b>TOTAL</b>	-	12,229	-	3,507
<b>Others</b>	20,276	42,683	20,512	53,600