THE AMERICAN OIL & GAS REPORTER®
APRIL 2009
The "Better Business" Publication Serving the Exploration / Drilling / Production Industry

Global Economic Recession, Soft Commodity Prices Impact International Activity

By Philip H. "Pete" Stark

ENGLEWOOD, CO.–The unexpected and dramatic collapse of the West Texas Intermediate oil price from more than $147 a barrel during the first two weeks of July 2008 to $30 a barrel on Dec. 19 is a hallmark for the global economic situation.

Although crude oil prices have regained some momentum–at least for the time being–the U.S. and international economies remain in considerable distress. As Sara Johnson, managing director of global macroeconomics at IHS Global Insight, proclaimed during CERAWeek 2009, in February, "The world is in the midst of the worst recession in six decades." Even with oil prices increasing to more than $50/bbl on the New York Mercantile Exchange in late March, pessimism and uncertainty abounded as unemployment continued to creep higher, stock markets maintained their downward slide, and policy makers in Washington debated yet more corporate bailout plans. "How deep?" and "How long?" are the prevalent questions on the wall of worry.

IHS Global Insight's outlook for 2009 is not rosy, with base case global gross domestic product expected to shrink by 2.1 percent and world trade expected to decline for the first time since 1982. The recession, which commenced during the fourth quarter of 2007, could endure through 2009 as month-to-month adjustments to this outlook continue to deteriorate.

Moreover, the global synchronization of financial systems and trade means that no regions of the world will be spared from economic deterioration. Advanced economies–like those in the North American Free Trade Agreement and Western Europe plus Japan–are expected to take the worst hits, with GDP dropping 2.0-3.5 percent or more during 2009. Developing and emerging economies will not be immune from this recession either, with GDP growth rates reduced by 50 percent or more. Various drivers of the recession impact each region. Some are hurt by the meltdown of credit markets and the freefall in housing values, while others are impacted by the collapse of commodity prices and reduced demand for exports.

The United States is the "ground zero" of the global recession. It looks like the 6 percent decline in U.S. GDP during the fourth quarter of 2008 will be repeated during the first quarter of this year. Stabilizing the housing market and restoring the flow of credit from banks are thought to be key in stopping the bleeding and restoring confidence in the economy. Depending on the pace of take up in the government stimulus packages, IHS Global Insight forecasts that the peak-to-trough decline in real U.S. GDP could range from 3.4 percent in the base case to 4.5 percent in the "pessimistic" case. Assuming prayers are answered and the economic stimulus packages gain traction, global GDP growth might reach 2 percent during 2010, thus reflecting the end of the recession.

Energy Demand

Not surprisingly, demand for energy, which fuels the global economies, is moving in concert with the recession (Figure 1). Assuming economic recovery during 2010, primary energy demand growth would return to prerecession levels during 2011. In a deep recession scenario, however, energy demand would remain weaker for a longer period. Cambridge Energy Research Associates estimates that global oil demand could decline by as much as 1 million barrels a day this year. OPEC surplus-producing capacity could more than double to 3.9 million bbl/d during 2009 and increase to 4.6 million bbl/d during 2010 as active capacity expansion projects come online. These factors would tend to dampen any further recovery of oil prices.

Under a deep recession scenario, global natural gas demand would remain flat during 2009, mostly supported by power generation, which would offset significant slumps in industrial gas consumption. Global gas markets also must deal with a surge (+8.2 billion cubic feet a day) in liquefaction capacity for liquefied natural gas during 2009-10, which will create a significant gas bubble. The near-term combination of moderate demand and increased supplies will tend to dampen the recovery of natural gas prices.

Longer-term energy demand will be driven by the pace of economic recovery plus the pressing desire for 4.9 billion people in less-developed countries to improve their standards of living. A more complex interplay of energy prices, technology, environmental and policy considerations will drive energy demand in developed countries. Assuming economic recovery during 2010, annual global energy demand growth from 2011 through 2017 could return to prerecession rates of 1.2-1.5 percent for oil and 2.5 percent for gas.

International Business Climate

The exploration and production business climate, which adjusted over a period of six years to increasing oil prices, now must readjust to a 70 percent decline in oil prices that occurred in only six months. From 2002 through 2007, the exploration and production business climate changed substantially:

- Producing countries increased fiscal terms and tightened control over their hydrocarbon resources (thereby reducing access);
- Competition increased as all segments of the industry expanded their international investments;
- Driven by concerns about energy security, national oil companies (NOCs) expanded exploration and production investments into the international arena;
- Upstream costs, as measured by the IHS Upstream Capital Cost Index, doubled between the first quarter of 2004 and the first quarter of 2008;
- Political uncertainties and civil unrest emerged in several important producing regions; and
- Environmental regulations tightened along with an increase in anti-oil sentiment, particularly in developed countries.

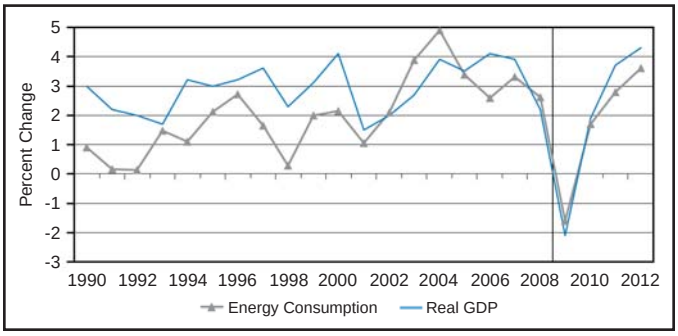
The manner in which these factors change in response to the global economy will impact the future course of international exploration, drilling and production. The realignment of costs with oil and gas prices, improved access to resources by international oil companies (IOCs) and enhanced collaboration between IOCs and NOCs would stimulate new upstream investments, but may be slow to materialize.

Rising oil and gas prices offset the negative impacts of the evolving business climate from 2002 through 2007, and the petroleum industry generated robust profits during this period. At the 2009 NAPE International Forum, Carlos Macellari, director of geology at Repsol, pointed out that everybody wins during such periods of change, where prices and business climate remain in synch.

He also pointed out that the opposite is true when the trends reverse and are out of synch. Now, both producing nations and operating companies must adjust their policies and portfolios to

FIGURE 1

Relationship of Changes in Primary Energy Consumption and Changes in Real GDP



a much lower oil price environment. This will not be easy because government policies and costs tend to adjust slowly in response to declining and weak oil prices.

After oil prices slumped to $10 a barrel in 1999, for instance, much of the legislation to improve fiscal terms was not implemented until two years later. Even though oil prices began to decline precipitously during July 2008, CERA's Upstream Capital Cost Index did not turn around until the fourth quarter when a modest 4 percent decline was recorded. As a result, many capital-intensive projects may be delayed or canceled until credit loosens and costs readjust to the lower-price environment. New projects like those in high-risk or high-cost offshore deepwater plays, oil sands projects in Canada and Venezuela, and hydrocarbon conversions such as gas-to-liquids appear vulnerable at oil prices below $50/bbl.

In this environment, some key producing countries, which set their 2009 budgets with expectations of revenues from $60-$80/bbl oil, also will feel the pain. Independents will be challenged to manage their portfolios through 18 months or more of weak demand, moderate prices and tight credit.

Activity Trends

Through February 2009, international exploration, drilling and production activity had decreased surprisingly little with respect to the magnitude of the oil price collapse. For February 2009, Baker Hughes reported 1,020 active rigs in its foreign rig count, down only 86 rigs (8 percent) from the September 2008 peak and only 1 percent from February 2008. This compared to a 34 percent drop in the U.S. rig count from September 2008.

Other measures of international upstream activity give mixed signals. International license awards during 2008, for example, dropped 21 percent from 2007. Africa (notably Algeria and Egypt) and the CIS (primarily Russia) suffered the largest regional declines in license awards. The timing of license rounds, changes in policies and perceptions of opportunity can substantially alter year-to-year licensing activity.

In Latin America, for instance, Brazil's award of 99 licenses during March 2008 offset a significant drop of license awards in Bolivia and lower levels of awards in Peru and Colombia. A 165 percent jump in license awards in Turkey also more than offset moderate declines in awards throughout other Middle East countries.

International well spuds during 2008 dropped by 765 (7 percent) from 2007. The decline was driven by a 34 percent decrease in well spuds in Russia, plus smaller declines in Europe and Africa. Counter to the overall moderation of international well spuds, increases in new drilling were recorded in Gabon, Libya, Uzbekistan, China, Brazil, Colombia and Oman. International exploratory well completions, on the other hand, remained flat between 2007 and 2008. Increases in Australia, the Far East and Latin America exploratory wells were offset by decreases in the Middle East, the CIS and Europe.

The international exploration outlook remains positive as a result of continued strong seismic activity. According to World Geophysical News, the number of active international seismic crews on March 1 was 17 percent ahead of the number of active crews on the same date in 2008. Much of the increase was the result of increased offshore 3-D crews in Europe, Africa and the Far East.

With longer project cycles and substantial government participation, international exploration and production activity is not likely to decrease as much as North American activity will drop in response to the recession and lower oil and gas prices. Nevertheless, the longer negative global GDP and low oil prices prevail, the more severe will be the negative impacts and their duration on international activity. Postponements of high-cost projects and high-risk frontier wildcat wells have already been announced.

State Of Industry Affairs

At the NAPE International Forum, Linda Kinney, vice president of IHS Herold, noted that large corporate transactions drove a substantial increase in worldwide merger and acquisition activity from 2005 through 2006 (Figure 2), but essentially dried up over the past two years. Asset deals became the driver of worldwide transactions during 2007 and reached an all-time high 70 percent of transaction activity during 2008, when the value of overall deals slumped more than 30 percent as credit markets withered and oil prices collapsed.

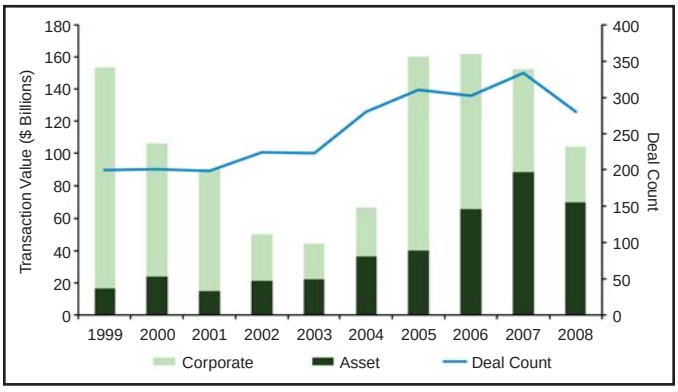
Kinney also highlighted two other trends. First, the number of international deals increased slightly since 2006 and reached 100 transactions during 2008, when the volume of international deals–about $63 billion–almost equaled the volume of North American transactions. Second, the percentage of gas transacted reserves more than doubled over the past five years and reached a high of almost 70 percent during 2008. Deals in U.S. shale gas plays and in Australian coalbed methane were instrumental in the dominance of gas-related transactions.

According to Kinney, the decline in commodity prices is expected to eventually stimulate a resurgence in corporate consolidations. For now, however, buyers and sellers remain reluctant to act because of uncertainties about the recession and the credit crisis. A few deals in the more liquid U.S. market may help establish new price-per-boe parameters to get the ball rolling for international consolidations.

Even though dealing with the recession commands immediate attention, the petroleum industry remains aware of the challenges to develop sufficient oil and gas supplies to meet long-term demand trends. Panelists in the morning session of the International Forum presented their views on the theme, "Where Will Tomorrow's

FIGURE 2

Annual Worldwide Upstream Transactions and Dollar Volume of Corporate versus Asset Transactions (1999-2008)



Oil Come From?" The three pillars of oil and gas supplies–field growth, unconventional resources, and "yet to find"–provided the framework for the discussions.

In a keynote address, Mike Bahorich, executive vice president of E&P technology at Apache Corporation, emphasized that leading-edge technologies are the drivers for Apache's success in boosting supplies from a balanced portfolio of North American and international prospects. Critical to the prevailing business climate, Apache has leveraged engineering, petrophysics and geophysics technologies to substantially boost productivity from tight unconventional reservoirs while also reducing costs.

Compared to vertical well completions, Apache demonstrated tenfold increases in initial potential production rates from its horizontal multistaged frac designs and has applied these to international projects like the Ootla area in Canada's Horn River Basin and in Argentina's Neuquen Basin.

Bahorich highlighted the importance of integrated science in developing resource plays and noted that seismic monitoring of fracture stimulations, swellable packers, tubular designs and reservoir models also play an important role in optimizing well completions. To improve efficiencies and reduce costs, Apache also has quickly deployed its integrated core, petrophysics and production analyses and enhanced seismic survey technologies to its international projects.

Operator Perspectives

Executives from Repsol, ROC Oil Company Ltd., Challenger Minerals Inc. and Gran Tierra Energy Inc. provided diverse perspectives on their strategies to grow oil and gas supplies. All expressed optimism that momentum from their successful international exploration and production programs would continue, but they also commented that their success included disciplined management of financial and commercial interests and sharing of risks with compatible partners. A clear understanding and a focus on core competencies and core areas also are keys to their success.

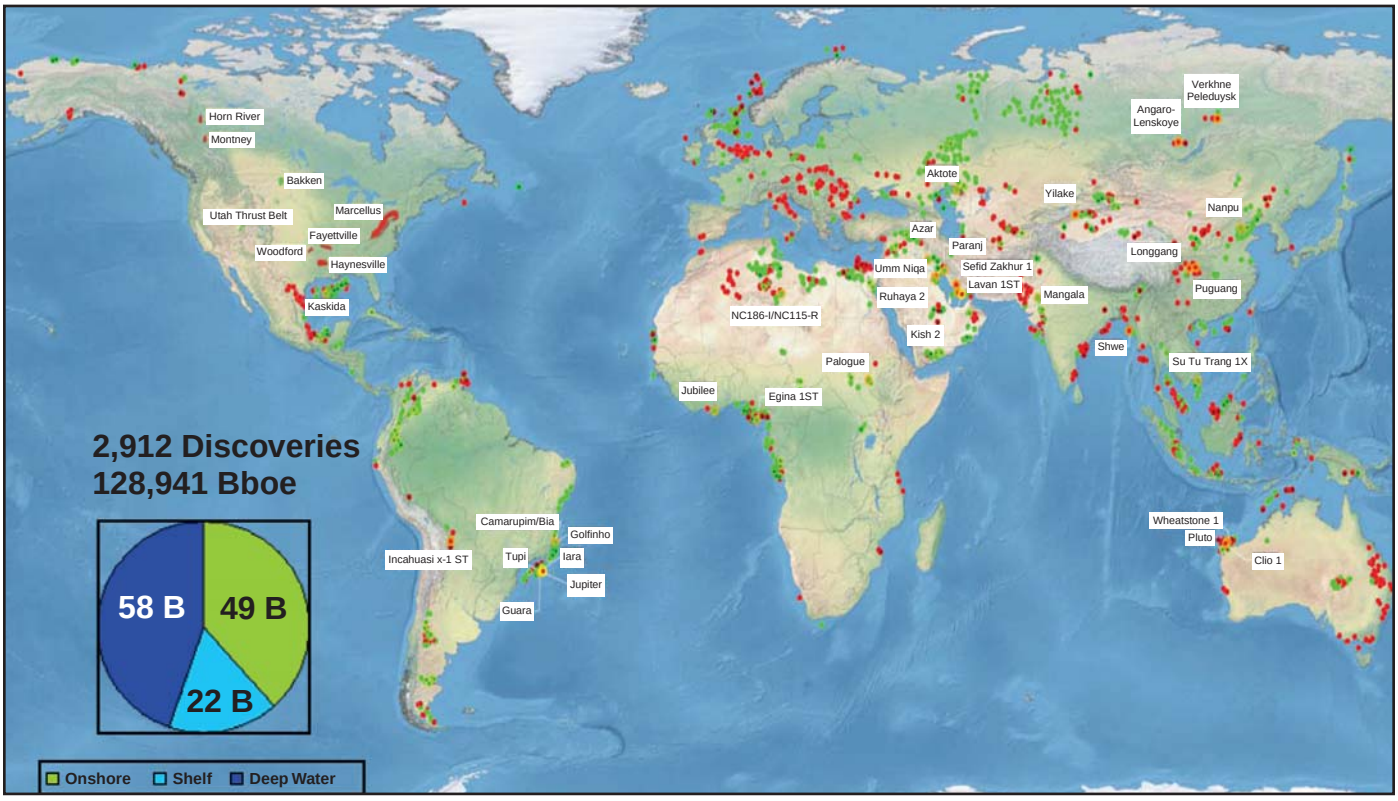
Core areas varied for each of these companies. ROC Oil Company exploits its international offshore experience and pursues high potential prospects in Australia, Asia and Africa, where it knows the geology and has established relationships with host governments and operating partners. Challenger Minerals focuses its investments on undeveloped or underdeveloped assets in proven, mature offshore provinces where it can leverage its Gulf of Mexico competencies, its experienced staff and Transocean's regional operating knowledge to develop drill-ready prospects. Growing reserves through field growth processes is a major component of Challenger Minerals' business model.

Dana Coffield, chief executive officer of Gran Tierra Energy, outlined the principles that were followed by his 2005 international startup company to establish 18.1 million boe reserves with 15,000 bbl/d production by mid-2008. The foundation of the principles is built on host governments that are aligned with the needs of independents and that have proven petroleum systems, attractive fiscal terms, stable legal systems and active deal flows.

Coffield noted that these principles typically are found in countries with declining reserves and production, but with progressive governments. Gran Tierra has focused its assets and

FIGURE 3

Significant International and Frontier North American Discoveries (2003-08)



developments in Argentina, Peru and Colombia, and pursues a mix of onshore development projects in established fields, heavy oil projects and potential high-impact exploration prospects.

Repsol's Carlos Macellari illustrated how a major international company must assess global oil and gas resources and prospectivity to identify high-potential basins and plays that could evolve into core areas for exploration and production investment. He commented, "What matters most is not the reserves of a basin, but the volume to which we have access." Repsol's growth strategy is based on its focus on core areas, exploiting operating efficiencies to maximize existing reserves, leveraging technologies to establish reserves in frontier areas, and establishing strategic relations with host countries. To this, Macellari added an African proverb: "If you want to go fast, go alone. If you want to go far away, go accompanied."

International Exploration

Even though the three pillars of oil and gas supplies–field growth, unconventional and exploration–offer similar recoverable resource potential, exploration still delivers the sizzle for future supplies. A review of exploration trends over the past six years provides insights into the opportunities and challenges in the exploration arena.

From Jan. 1, 2003, through Nov. 1, 2008, international exploration yielded 123 billion boe, including 66 billion boe of liquids, from 2,912 discoveries. Thirty-one of the international and Gulf of Mexico discoveries and seven unconventional onshore North American plays that emerged during this period are classed as "giant" fields with recoverable reserves greater than 499 million boe. These giant discoveries are highlighted on the map in Figure 3.

NOCs and major international companies operate most of the giants, but independents have participating interests and operate three of the giants. Offshore discoveries dominated the international/Gulf reserve additions during this period, with deepwater discoveries yielding 42 percent of the reserves and 11 of the 31 reported giant fields.

Ultimate recoveries for the seven North American unconventional oil and gas plays are more difficult to specify, but each of the seven plays is credited with at least 1 billion boe of ultimate recoverable oil and gas (the Utah Thrust Belt is highlighted on the map because it has yielded the two largest conventional oil discoveries in the lower-48). The good news is that giant discoveries and high-potential new plays are still being recorded and are widespread throughout the world's producing regions.

Recent exploration trends also generate concerns. Even though the average number of discoveries increased over the past six years, only 11 billion boe of liquids have been added each year, which is far short of the 30 billion barrels of liquids consumed annually. Moreover, the record $400 billion invested in exploration, drilling and production in 2008 apparently failed to improve on the averages. The combination of record high prices with restricted access to resources, contentious fiscal terms and soaring costs did not improve the world's oil supply outlook.

Perhaps one outcome of handling the recession will include the realization that enhanced collaboration among all stakeholders and rebalancing risks with rewards could yield more satisfactory "win/win" results.

Game-Changing Plays

Looking to the future, the emergence of four game-changing plays during the past six years will drive important future developments in exploration and production. The game-changing plays include Brazil's deepwater subsalt play, the Gulf of Mexico Lower Tertiary subsalt Wilcox, multiple U.S. onshore shale gas plays, and the Bakken Shale in the Williston Basin and other oil shales.

Brazil's deepwater subsalt play extends 500 miles across the Santos, Campos and Espirito Santo basins, highlighted by the 6.5 billion boe Tupi Field discovery. The play has yielded three of the top four giant fields and added more than 15 billion boe of recoverable resources. The play potential could exceed 50 billion boe and is stimulating efforts to identify a companion subsalt play along Africa's Atlantic continental margin.

The emerging Lower Tertiary/Wilcox subsalt play in the Gulf of Mexico extends 300 miles along the Outer Continental Shelf. To date, it has delivered more than 3 billion boe in estimated recoverable reserves and has an estimated 13 billion boe of upside potential.

The emergence of giant recoverable gas reserves in six shale gas plays has changed the game for North American natural gas. The combination of horizontal wells with staged hydraulic fracs has revolutionized the recoveries and economics of gas production from fractured shale source rocks. Conservative assessments indicate that two plays, the Marcellus Shale in the Appalachian Basin and the Haynesville Shale in Louisiana, could yield more than 50 trillion cubic feet, while the Fayetteville in Arkansas and the Montney and Horn River Basin plays in British Columbia could yield more than 20 Tcf.

It is possible that potential resources in these plays could reach or exceed 500 Tcf. This is fantastic news for North American energy security and a plus for climate change solutions. North American shale plays provide a model that experienced operators–mostly large and medium-sized independents–could expand into international regions such as Europe, which has analogous source rocks, existing pipeline infrastructure, growing gas demand and a quest for energy security.

Horizontal wells and staged hydraulic fracs also have enabled the extension of the Bakken Shale oil play from Montana into North Dakota, where the U.S. Geological Survey estimates the new trend could yield almost 1.9 billion boe. Operators also are expanding the Barnett Shale oil play in North Texas and other shale plays in the oil window are likely to emerge. Recovery of oil from shales may be a sleeper for future extension into the international arena.

Independents spearheaded the evolution of the game-changing North American unconventional shale gas and shale oil plays and are also playing an important role in the development of the deepwater Lower Tertiary play in the Gulf of Mexico.

Tough Year

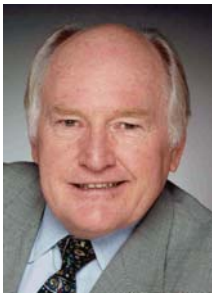
It appears 2009 will be a tough year for the petroleum industry, and especially for those companies with weak balance sheets and limited cash flow. A few with overextended credit, such as Canadian Superior and fellow Canadian operator Oilexco, have already faltered. Independents with established and growing production in countries with favorable policies and business conditions are best positioned to prevail through the recession.

There are a few indicators that various segments of the industry are beginning to respond to the current business conditions. Colombia has launched promotions to stimulate the financial community to increase its exploration and production investments and for service companies to relocate inactive crews and equipment to support its healthy upstream activities. Trinidad and Tobago announced plans to improve its fiscal terms to stimulate exploration and production investments. But it will take time for countries to pass legislation to adjust fiscal terms and for costs to realign with prices.

It looks, however, like company deals are beginning to perk. International NOCs and major integrated companies are evaluating opportunities to acquire participating interests in high-impact prospects that fit their long-term energy supply objectives. China National Oil Company's $499 million bid for Verenex Energy, with promising Libyan holdings, is an example.

This is good news for independents, which have generated more than half of the high-impact prospects (larger than 250 million boe) identified in the past three years. A trend toward increased partnering to spread the opportunities and risks may be emerging. And it is only a matter of time before the anticipated surge in merger and acquisition activity takes off.

The oil price collapse and global recession will force unpleasant realignments within the petroleum industry. It is clear, however, that the critical values that independents deliver–including innovation, risk taking, resilience and efficient operations–may flourish into the future by prevailing during tough times. ❐



PHILIP H. "PETE" STARK

Philip H. "Pete" Stark is vice president of industry relations for IHS Inc. in Englewood, Co. In 1969, he left a position as geological computing coordinator at Mobil to join Petroleum Information Corp., now IHS Inc., and has served in senior management positions in technical services, technical marketing and international relations. Stark serves on the board of the Petroleum Public Data Model Association, and was a lecturer on geologic computer applications for AAPG's continuing education program. He also has served as chairman of the alumni advisory board for the University of Wisconsin's geology and geophysics department. Stark holds a B.S. in geology from the University of Oklahoma, and an M.S. and Ph.D. in geology from the University of Wisconsin.