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**“The Oil and Gas Reserves Report -
post Sarbanes-Oxley Act of 2002”**

Ron Harrell, Chairman & CEO

**Ryder Scott Company
Petroleum Consultants**

Houston • Denver • Calgary

**ron_harrell@ryderscott.com
713-651-9191**



RENEWED EMPHASIS ON:

- Who prepared the report ?
- What qualifications do they possess ?
- What level of independence was provided to preparers ?
- What standards were followed ?



EXISTING SPE STANDARDS

“ Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information “ adopted by the SPE Board in 1977 and revised in 2001.

(Available through SPE website at www.spe.org)



STANDARDS ADDRESS FIVE BROAD AREAS

- a. **Compliance with relevant reserves definitions**
- b. **Qualifications for persons estimating and auditing reserves information**
- c. **Standards of Independence and Objectivity**
- d. **Standards for Estimating Reserves**
- e. **Standards for Auditing Reserves**



ADAPTATION OF SPE STANDARDS FOR PURPOSES OF SARBANES-OXLEY

SPE Paper No. 84143...

**“Current Applications of the Standards Pertaining
to the Estimating and Auditing of Reserves
Information to Meet the Objectives of the
Sarbanes-Oxley Act of 2002”**

...to be presented in Denver on October 6, 2003.



CORPORATE INTERNAL AUDIT TEAMS

- a. **Internal team reporting directly to management**
- b. **Team consisting of qualified individuals**
- c. **Team authorized to provide oversight of reserves estimation practices throughout company**
- d. **May supplement team with third-party advisors**
- e. **May obtain third-party reserves study of select fields, a rotating audit of one-third of company reserves annually, an audit of 70-80% of properties annually or a full company reserves study.**



REPORT TYPE

Reserve Report vs. Review / Audit



RESERVE REPORT VS. AUDIT VS. REVIEW

Reserve Report - grass roots evaluation in which the estimator has examined and evaluated all available source data.

Reserves Audit - an examination for the purpose of expressing an opinion that a reserve report is reasonable in the aggregate, and generally conforms to accepted engineering and geological evaluation principles.

Reserves Review - an analysis of the process and procedures established to assure that reserves have been estimated in compliance with relevant standards



AUDITS IN GENERAL

- Review of work done by others.
- May be cursory or in-depth.
- Usually concentrated on 75-90% of value.
- Underlying report must be current and of adequate quality.



THE RESERVE AUDIT

- A review of the data utilized and the interpretive geological and reservoir engineering procedure utilized in a detailed reserve study at a specific date. The purpose of the audit is to provide an opinion as to the reasonableness of the reserve estimates and the correctness of the methodology used.
- The audit is also a test of the classification of reserves - proved, probable or possible.



WHAT AN AUDIT IS INTENDED TO DO

It is intended to provide a test of reasonableness of reserve estimates and classifications. It is the basis for:

- **Certain S.E.C. Filings**
- **Acquisitions / Trades / Divestitures**
- **Management Decisions**
- **Loan support**



WHAT IT IS NOT

- It is not a detailed study by the auditing consultant. The consultant will not sign off on the reserve estimates as being equivalent to what the consultant would present in a detailed study.
- It normally does not encompass all remaining reserves of the company.
- It does not rigorously test the “economic” part of the reserve definitions of the S.E.C., the SPE, or the World Petroleum Congress.
- It does not provide future net income or discounted future net income in a report.
- It does not provide or infer a fair market value.
- It is normally not used for bank loans, litigation, or estate appraisals.



ADVANTAGES OF THE AUDIT

**When used for those purposes previously listed,
it is much more time and cost efficient.**



DISADVANTAGES OF THE AUDIT

It has considerably less impact in terms of third party reserve reporting and may not be acceptable for certain uses.



TYPES OF RESERVE AUDITS

- Audit of the majority of the estimated reserves ranked by major properties.
- Application of “80/20 rule”, where 80% of reserves are contained in 20% of the properties.
- Audit does not address rates of production or revenues.



TYPES OF RESERVE AUDITS (Cont'd)

- Can expand audit to reserves and future prod.
- May enlarge audit to include all facets through income.



THE AUDIT PROCEDURE

- **Receive the company reserve study and a description of the general methods used and the type of audit requested.**
- **Determine the major regional areas in which the majority of the reserves are located and assign specialists in these areas to handle the area audits. Analog information and experience is of high priority in most geographic and geologic areas.**
- **Meet with the professionals who completed the studies to determine the methods used.**



THE AUDIT PROCEDURE (Cont'd)

- Review the data used by the company professionals to complete their analyses, including selected geophysical, geological, and reservoir engineering data (our selection) and add the selected data to the consultant's in-house database.
- Determine, on a property-by-property basis, agreement, in general, with the estimated recoverable reserves. If not, consultant will complete a reserve estimate of the property.
- It is best to complete the audit prior to the client publishing the reserve report.



TOLERANCES

Consultant will tabulate the company's reserve estimate versus our reserve estimate on a property-by-property basis and total the results.

If within a certain percentage tolerance, consultant will complete the audit letter. If not, request the company to adjust their reserve estimates to comply with consultant adjusted values. Audit letter then issued.

- Typical audit tolerance - 10%
- If more than 10% difference, usually no letter will be provided



THE FINAL WORK PRODUCT FOR AN AUDIT

**A letter to the company
which states
the results of our audit
in terms of the quality of the data used
and
the professional procedures used
in the reserve study
as well as
a statement as to the reasonableness
of the reserve estimates.**



THE RESERVES REPORT

- **Independent estimate of reserves (by categories), production forecast, costs and revenues**
- **May include all properties of an entity**
- **May include only major properties – typically 80% ±**



THE RESERVES REPORT

- **May be based entirely on “raw data” with all interpretations made by consultant**
- **May rely in part on interpretations prepared by client but modified as appropriate by consultant.**



READ THE FINE PRINT !

- Report text should explain purpose of report.
- Reserves definitions identified.
- Sources of all data identified.
- Vintage of data indicated.
- Assumptions employed.
- Caveats about relevant items.



20 QUESTIONS ...

**... that should be asked
to help assess the
degree of reserve risk
associated with a
company's reserves.**



1.

**Who did the underlying
reserves evaluation?**

**Internal engineering
or
independent consulting firm ?**



2.

Is the independent consulting firm or company engineering staff knowledgeable of SEC reserve definitions and the appropriate reporting requirements ?



3.

How long has the independent consulting firm been doing the company's reserves ?

Is the engineering firm familiar with special issues that might be involved with the company's properties ?



4.

Where are the reserves located ?

How knowledgeable is the company of the areas where the reserves are located ?

Are they in an area where assessment of reserves carries greater risk (i.e. Gulf Coast vs. Mid-Continent) ?

Are the reserves concentrated in specific areas, or are they widely scattered (i.e. do they have core areas of competency) ?

Are the reserves in areas that require higher operating and development costs (i.e. profit margin is smaller and expenditure demands are higher on the company) ?

Are the reserves in areas that are environmentally very sensitive ?

Are the reserves all domestic, or do they include international properties ?



5.

Is the independent consulting firm familiar with the areas where the reserves are located ?



6.

Does the independent consulting firm look at all of the company reserves or just a percentage ?

Does the consulting firm do a detailed study or an audit ?



7.

Are the company's reserves concentrated in a small number of properties, or is the portfolio of properties more diverse ?

What type of interest position does the company hold in its different properties ?



8.

**Are the reserves mature,
or relatively new with
minimal production ?**

Is the reserve analysis primarily
based on performance methods
or volumetrics ?

Are the reserves strictly primary,
or do they include secondary
and EOR projects ?



9.

Are most of the properties operated or non-operated ?

If a high percentage of the company's reserves are non-operated, what is known about the operators ?

Are the various operators substantial from a technical and business standpoint ?

Do the operators have an established track record of operations in the areas where the reserves are located ?



10.

What is the distribution of proved reserve status categories (i.e. producing, shut-in, behind pipe and undeveloped) ?

Are the reserves fairly well split between categories, or is there a high percentage in the non-producing and particularly in the undeveloped ?



11.

What is the RIP ratio for proved producing reserves ?

Is this realistic for the type of proved producing reserves stated in the SEC filing ?

Is this realistic taking into account the current production of the company ?



12.

What is the RIP ratio for total proved reserves ?

What level of producing rates will have to be added by non-producing and undeveloped reserves to make a reasonable life index ?

Does this seem attainable for the types of reserves involved ?



13.

Are the reported reserves based on the appropriate economic parameters as specified by the Securities and Exchange Commission ?

Did the reserve appraiser use current economic conditions ?



14.

**Do future revenue projections
appear reasonable considering
recent historical company
revenues ?**



15.

Do future cost projections appear reasonable considering recent historical company expenditures ?

Have the appropriate operating costs been applied against the reserve projections ?

Does the company have sufficient cashflow to carry their burden of operating costs and service other necessary company expenditures ?

Have sufficient development costs been included to develop the stated non-producing and undeveloped reserves ?

Does the company have an established track record and the financial stability to spend the amounts of capital dollars necessary to fund the development ?



16.

How does the company compare over time in regard to “revisions of previous estimates” ?

Have the revisions consistently been significant in size in relation to the company’s base reserves ?

Are the revisions consistently negative ?

Are the negative revisions consistently associated with the non-producing and undeveloped reserve categories ?



17.

**“Extensions, discoveries, other additions”
are an indicator of how well the company is moving
proved undeveloped and probable reserves into the
developed reserve base of the company.**

**Is the company historically demonstrating an ability to
do so ?**

How well is the company finding new reserves through the drill bit ?

Does the company have an active exploration and development drilling
program ?

Does the company have a good acreage position around its developing
properties ?

What kind of exploratory acreage position does the company hold ?



18.

Does the company typically grow through acquisitions or the drill bit ?

Is there a good mix of both ?

Does “purchase of reserves in place” contribute significantly to the company’s reserve base ?

If the company traditionally grows through acquisitions, is the company paying an appropriate amount for reserves ?

Could too much success with competitive bids mean they are over-paying for the reserves ?



19.

**Does the company “sell reserves in place”
to divest themselves
of non-strategic reserves ?**

Is the company burdened with a large number of low margin
wells in non-core areas ?



20.

How recent is the reserve evaluation that is the source of the company's reserves in the public filing ?

Based on the answers to some of the previous questions, are the reserves of a nature that significant changes in reserve quantities can occur over a limited period of time ?

Is the reserve evaluation a recent study or a prior study that has been mechanically adjusted to a specific as-of date for public reporting purposes ?



CONCLUSION

Questions / Answers

