

SLIDE 1 –

Thank you. In the interest of time I am going to do something I have never done – read this talk.

First I wanted to thank two tpa colleagues, janet tyrell-ead for the slides and john andrew for helping show them.

What I would like to share with you today is a philosophy of exploration developed over my career and then some thoughts about the qualities of great explorers. I started out of college with Shell Oil Company and over the next several years was subjected to the additional education provided by Shell University.

Those of you who have experienced the thrill of exploration will hopefully appreciate some of my ideas developed over the years.

As explorers, I believe we all want to see what's just beyond the next hill, next mountain or next formation. Our predecessors were lone prospectors looking for the mother lode. And in many ways our petroleum exploration was that way for many, many years – even in large companies.

When I started with Shell the geologists were not allowed to touch a seismic line and geologists and geophysicists were managed separately. You never saw an engineer at the office because they were on a separate floor – as was land. I know it is hard to believe but it's true.

One of my themes today is teamwork. I was unique in those days with Shell. I worked both as a geologist and geophysicist. In my eighth year I was Manager of Geological Research and the Exploration Director of Research came in and said, "Thomasson, figure out a joint project you can do with Nestvold" (the manager of geophysical research). I had seen lots of stratigraphy on the seismic I had been working so we created two projects devoted to what we now call stratigraphic geophysics. That was 1968.

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I had read Toffler's "Future Shock" in 1969 which described task forces that were designed and created to accomplish a specific project, and then disbanded. As Shell's Manager of Offshore Exploration in 1970 I realized we had to have more geophysicists

– so, against the will of Shell’s Chief Geophysicist, we trained geologists in the division to be geophysical interpreters. we increased productivity a la Toffler but we added a twist to the team approach, - we spread special expertise through multiple teams. We started by creating teams of paleontologists, geologists, petrophysicists, geophysicists, geochemists and reservoir engineers.

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I published a paper on Synergistic Exploration in 1980 and used what I called the exploration hexagon – shown here. You can see that each member of the team is communicating with every other member of the team, and that the major petroleum disciplines are represented.

We realized that we could maximize our productivity if we could spread certain special expertise through several teams. We were short of people and necessity is the mother of invention. We used these two concepts, the team approach and having people work on more than one project at a time, and produced one of, if not the most, successful lease sales Shell has ever had.

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This slide shows diagrammatically the twist we put on the team concept. I have used this same concept through four companies, including our current company Thomasson Partner Associates. As you can see, each individual is involved in more than one project where their special expertise is best suited.

Another important aspect of the multiple team approach is Critical Mass. You need some minimum number of technical people SELECTED for their expertise to make this whole system work. In my experience it requires a minimum of twelve technical staff to reap maximum benefits and more is better.

By the late 1980s and early 1990s most companies were starting to use the team approach. Many still have not applied the twist. At Thomasson Partner Associates we have taken these concepts to a very high level.

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The principle reason the team approach works so well is because the play concept requires many different disciplines.

A play is a petroleum system within a large geographic area with similar source rocks, maturation and migration history and similar traps and seals. The fundamental play concept was emphasized at Shell. The play must result in well-defined drillable prospects.

To create a new play from scratch is an exciting activity. It requires understanding of petroleum systems and applying this understanding to an unexplored area, such as our Moon Canyon discoveries in Utah. It can be a brand new petroleum system in either a mature or in an unexplored area such as our current exploration project in Idaho. the key is developing a knowledge base and using TECHNOLOGY. This is not a trivial effort.

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When creating a new play there are some important principles.

You must understand the regional stratigraphy and structure within which the play opportunity exists. This requires detailed study of the richness, maturation and expulsion timing of the source rocks. This must be integrated with the stratigraphic and structural history. Detailed petrology of all phases of the system can be important.

We rely on doing field studies to understand analog fields. It helps a lot to know what you're looking for. Nearby analogs are best, but in a frontier play like Idaho you may have to go to China or Brazil for your analogs. Scale is an important part of this analysis. geophysical data are important and may be critical in this phase.

Peer review is also critical. Each new opportunity in our shop must go up against over 1200 man-years of experience, and beat dogma and prejudice.

I remember well a division manager from a major oil company spending a day with us at TPA. She was a geophysicist and she had her chief geologist and chief landman with her. We showed them eight projects in eight different plays. At the end of the day she said to her staff, "Now you all have just seen what I want you to do." She had twelve years experience and they each had much less. There was absolutely no

way they could compete with us. The eight new plays were created from the knowledge base of great experience using the latest technology.

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TPA's approach to the business side of exploration is very simple. our Mission Statement is our fundamental guide. It's six words.

1. Survival – You can't be successful if you don't survive.
2. Fun – You must enjoy what you're doing to do a really great job.
3. Technology – You must stay on top of the latest technology. It requires a constant learning process.
4. Golden Rule – This is critical for true success. You simply treat everyone the way you want to be treated.
5. Wealth – This is important to us and to our families that depend on us. If we get all the others right – with time we will create wealth.

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What kind of people make the best explorers? Let me start with the basics. I recruited for Shell early in my career. I recruited, John Andrew who is handling the slides, for Shell in 1967. He is now a TPA partner. The following basic characteristics are reflected in TPA.

1. Honest – With the data, with peers and especially ourselves and our partners.
2. Intelligent – There is no substitute for intelligence.
3. A high work ethic – You will be luckier if you work hard.
4. High level of creativity – Brand new ideas are rare, but they come to people who are smart, work hard and who are curious about relationships. The more you see and experience the more creative you can be. Some people stand out with a special gift. I have known only a handful of people who could get a completely new idea that didn't involve building on other's ideas.

5. Ability to work well with others – For the creative synergistic team of honest, smart, hard working people to function well together they must be willing to share their time and talent with others.

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there are some other very important qualities:

1. Curiosity – those people who are naturally very curious about the world we live in will turn over the extra stone and get information that allows them extra insight.

2. Basic data – It is important to channel that curiosity into digging out all the basic data. Never rely on computer-generated maps from data that has not been checked thoroughly. You cannot rely on interpreted data that you have not checked. We have killed lots of plays by taking this step. Larry McPeck, a tpa partner, is naturally curious. By digging, he found a show well that had cum'ed 12 BCF – not 4 BCF which most records showed. The end result was Cave Gulch – a very large field.

3. Problem solving – By to understand the problem the creative mind will only be satisfied after going back to the basic data. This combination is the most productive.

4. Vision – It is so important to see the big picture and to visualize the importance of major opportunities and constraints. Seeing the great exploration potential in the Rocky Mountains in 1986 made a big difference in my life. The major companies and many independents left Denver and went to Houston that year. They did not understand the resource pyramid, and the impact that both increasing technology and increasing prices would have on this unconventional area. I saw this as an opportunity to explore further down on the resource pyramid. They left Denver and we formed Thomasson Partner Associates.

5. Be a Contrarian – Think in a contrary fashion. When the horde stampedes one way, go the other way and take advantage of what they left behind.

6. Think Big - In TPA we have recently put together a play that has the upside potential for over 50 trillion cubic feet of recoverable gas.

We are working on a play in which we can demonstrate that over 50 billion barrels of oil have been generated.

7. Persistence – I am an example of persistence in the face of adversity. I trained myself both technically and in business and raised \$20 million – this was in 1980 when \$20 million was a lot of money. I thought the company I formed was my company. When the prices started dropping in 1983, it turned out the company belonged to the venture capitalists who put in the \$20 million. They fired me which turned out to be a blessing. I became president of another independent company with 60 people and annual revenues of \$20 million per year. The investor who bought the company had fired the previous president and hired me. Within two years we increased revenues to over \$60 million. Then when he sold the company and the new owner fired me I was ready for it. It did not discourage me, and that is when I came to Denver. Persistence has paid off for me.

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8. Technology and Art – Technology is the name of the game these days and we should trust it. However, exploration is still an art form. So also trust your gut. And when they are in conflict – for certain go back and check out the technology and the data one more time.

9. Passion and Enthusiasm – You will find the great explorationists are passionate about what they do. They are enthusiastic because it is fun and it is in their blood. My main mentor was the Vice President of Exploration for Shell. He guided most of my Shell career. R. E. “Mac” McAdams retired to Denver and when I got here we had lunch every month. One day when he was 84 we were at the Petroleum Club. He was starting his third company. All of a sudden he hit his fist on the table and he looked me in the eye and said “Damn it Ray, I wish I had 20 more years.” He didn’t want 20 more years to play with his grandchildren – he wanted 20 more years to do what we do. By the way – that is how I feel.

10. Optimism – I believe an optimistic outlook with a realistic objective appraisal will open up many new exploration plays. There is no substitute for optimism.

11. Mitigate risk – but take it – many companies no longer explore because the financial people who run them cannot handle risk.

The way to handle risk is to spread your investment over a critical number of high quality projects. The big successes will cover the many failures. And having been in the business a long time I know I am unable to pick out which of many good opportunities will be the most successful.

A case in point is one of our industry partners had the right to take any or all of our deals. I preached to them to take a piece of all of them. We, the people who created the projects, were unable to predict the big ones; and if we couldn't, they couldn't. They didn't believe me and rejected Cave Gulch.

12. Challenge dogma – We have lived with and had dogma preached to us all our lives. It is usually wrong. “I’ll drink all the oil found west of the Pecos.” “Continents can’t drift – there is no known force.” Challenge dogma!! Learn the truth.

13. Question the answers – Question the answer you and others come up with. Maybe the most important question is not “Do we know for certain that the play concept can work?” – but instead “Do we know for certain that the play concept can not work?”

We play high stakes poker, but we have lots of help. For me there are two other principles that have made the difference:

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1. Surround yourself with people smarter than you are.
2. Make certain everyone shares justly in the rewards.

Thank you.