EXECUTIVE SUMMARY (FROM *THE STRATEGIC HUMAN RESOURCES STUDY OF THE UPSTREAM PETROLEUM INDUSTRY: THE DECADE AHEAD* FINAL REPORT, PUBLISHED OCT 2003 AND UPDATED APRIL 2004)

This report documents a national study of human resources within the Canadian upstream oil and natural gas industry during the next 10 years.

Restructuring of the upstream petroleum industry has taken place in response to global economic change and the evolution of North American energy markets. One result is the concentration of assets in large companies. In fact, Canada now has few medium-sized active "explorers" of the kind that used to drive drilling activity. Junior companies and the few remaining medium-sized companies tend to build up assets and then sell to the royalty trusts. This has been the typical business model of recent years, one with profound implications for human resources.

This study, directed by the Petroleum Human Resources Council of Canada (Petroleum Council) and conducted by independent consultants, considered the role of Canada's upstream petroleum industry within the global marketplace, analyzed current and future market challenges, and assessed their impact on the domestic industry and its workforce. It then identified workforce demographics, skill and competency requirements, occupational supply and demand, key human resources challenges, and the impact of technology and the business environment on human resources issues. That analysis led to recommendations for change to existing human resources strategies and practices within the industry.

Scope

Traditional definitions of the petroleum industry include three sectors: upstream (E&P), midstream (processing, storage, large-diameter and small-diameter pipeline transportation), and downstream (refining and marketing). For the purposes of this report, we have defined the upstream industry broadly to include:

- Exploration and Production (E&P)
- Service Industries
  - Geophysical services
  - Drilling and completions
  - Service companies
- Pipeline Transmission
- Natural Gas Processing
- Heavy Oil and Bitumen Extracting and Upgrading

Direct employment by these sectors stands at 120,040 jobs, while the total (direct and indirect) employment impact is estimated at more than 500,000 positions.

Geographically, the study defined four main upstream oil and gas regions in Canada:

- the Western Canada Sedimentary Basin (WCSB)
  - Alberta, northwestern Saskatchewan, northeastern British Columbia and parts of Manitoba, the Northwest Territories and the Yukon Territory;

- the Oil Sands
  - primarily situated in northeastern Alberta and northwestern Saskatchewan;
- the North
  - the Mackenzie Delta, Beaufort Sea Offshore, and onshore areas in northern portions of the Northwest Territories; and
- the East Coast
  - the offshore areas under the jurisdiction of Nova Scotia and Newfoundland and Labrador.

The industry also operates in Central Canada, where all sectors are represented to some degree.

Quebec does not have current production, but it does have mainline oil and natural gas pipelines. There is also some exploration interest. As most of this exploration is in the eastern portion of the province and linked geologically to exploration efforts on the East Coast, this report's analysis of the East Coast is also relevant to Quebec.

Ontario, which has produced petroleum continuously since 1858, now accounts for less than one per cent of the national total but provides more than half of Canada's natural gas storage capacity. The skills needed to find and exploit natural gas storage structures are virtually identical to those of the conventional petroleum exploration and extraction industries. Like Quebec, Ontario also has mainline oil and natural gas pipelines. While the Ontario industry is farther along the life cycle curve than the WCSB, almost all of the human resources issues related to the mature WCSB basin are directly relevant to Ontario. Therefore, this report's analysis and discussion of the WCSB can be applied directly to Ontario.

Supply/demand analyses were completed for "in-scope" occupations (see Appendix B), as determined by a group of industry stakeholders. Because construction for upstream industry projects was defined as being outside the scope of the study, related occupations were not analyzed from a supply/demand perspective. However, the pressure of significant oil and gas and other industry construction on related operations and maintenance occupations within the upstream sector was considered.

Key Industry Influences and Effects on Human Resources

Managing the supply of qualified human resources is critical to the industry's ability to sustain itself and grow. The main influences on its management practices are:

- Globalization and the mobility of investment capital;
- Cyclical economic conditions;
- Operational excellence business model;
- Government regulatory requirements;
- Stakeholder expectations for involvement;
- Technological advances;
- Changing demographics; and
- Workplace skills.

All of these influences affect industry's ability to attract, retain and deploy a skilled workforce. It is important to note that while these issues affect the industry nationally, their impact varies regionally.

Regional Scenarios

The report discusses high and low case scenarios for each region over a 10-year period. These forecast industry activity and its impact on human resources. A summary follows for each region.

WCSB

The conventional upstream petroleum industry is in the maturity/harvest stage of its life cycle. As it matures, it places greater emphasis on cost reduction and production enhancement as ways of delivering acceptable shareholder returns. Advancements in technology are also expected to improve efficiency.

As production and reserves diminish, the industry looks increasingly to tight gas, coal bed methane and deep gas to replace declining conventional resources. Enhanced recovery of conventional assets will be important until such time as technologies are developed that allow new forms of the resource to be extracted and processed cost-effectively.

Fewer jobs will be required under either scenario. Outsourcing of non-core work will continue, as shown by research and development migrating to the service companies and the contracting out of maintenance work. As the industry leverages information technology (IT), the scope of some jobs will broaden.

Despite a projected decrease in overall labour demand during the next 10 years, certain skills are likely to be in short supply. The industry can balance labour supply and demand better by implementing programs that keep mature workers in place longer while ensuring that sufficient new hires are made to sustain occupational families. With respect to all but a few occupations, retirement of skilled workers will not be an issue in this decade. That gives industry time to prepare for this demographic shift.

Oil Sands

Growth is the driving factor in the Oil Sands region. Production under the high case scenario is expected to increase by 100 per cent in the next 10 years. Even under the low case scenario, production is expected to increase by 50 per cent before stabilizing during this period.

Consequently, demand for labour will be high. An estimated 8,000 new positions will be created during the next 10 years. Attrition due to age will also affect the supply of and demand for labour.

Ongoing cost pressures and the entry of new Oil Sands developers may have a further impact on human resources. A collaborative approach to managing growth will be needed so that enough new employees can be attracted. Without collaborative efforts, the result will be significant upward pressure on labour costs.

North

The North is in the startup phase of the industry life cycle. Under the high case scenario, a Mackenzie Valley natural gas pipeline could be operating by 2008/2009. Approximately 50 people would be required to operate the entire system; some 200 more would be required to operate the producing fields.

Attracting and retaining workers will be the challenge due to remoteness and climatic conditions.

Minimizing the “boom-and-bust” economic impact for the region will be a key area of focus for industry and local communities, as well as a means of ensuring employment for Aboriginal Peoples.

Increasingly, Aboriginal Peoples have been able to find sustainable employment by developing careers and businesses through service companies that support exploration and production activity. This represents a best practice for enhancing the participation of Aboriginal Peoples in the industry.

East Coast

The East Coast industry, which is in the mid- to late-startup phase, could have a significant economic impact on Atlantic Canada. Drilling success must be demonstrated soon, however, if further development is to occur. The need to streamline the complex regional regulatory process is recognized and underway.

The scale of the East Coast industry is pivotal to human resources issues. The industry has not reached the point where it can absorb enough new employees to build a sustainable talent pool. Many new graduates will need to seek employment outside of the region as relevant employment is not yet available locally. There is also a shortage of workers with offshore experience.

The industry is made up of three categories of workers: "personnel on board" or those who work offshore on a rotational shift, onshore-based workers who travel offshore as required, and those who only work onshore. The issues of climate and remoteness apply to the work on offshore platforms or other vessels.

Under the high case scenario, a fourfold increase in gas production is possible. Newfoundland and Labrador oil production will be roughly one-third of the Canadian light oil production once the White Rose field comes into production. The positive changes indicated in the East Coast high case demand scenario could accelerate the pace of the industry in the region and create labour supply/demand issues.

Industry Overview

As the competitive environment changes and as corporations reduce costs to improve performance, it will become increasingly difficult to attract workers with critical skills. This may be rectified, in part, by creating and sustaining a positive image of the industry as a desirable place to work.

Like many other industries, the industry will continue to restructure in response to competitive pressures and commodity price fluctuations. While the industry must respond to the economic and business environment to remain viable, industry leaders should consider the longer term impact of some of these decisions on human resources in the light of the challenge of attracting and retaining skilled workers.

Themes

A 1992 industry study[1] discussed challenges the industry would likely face in human resources during the subsequent decade. As substantive, industry-wide solutions have not materialized during the intervening years, many of those challenges remain.

This study identified four over-arching themes that capture the approach industry must adopt if it is to thrive:

Theme 1: Collaboration

There is a pronounced need for co-ordination and collaboration among industry associations, all levels of government, educational institutions, private training service providers, unions, and industry.

Theme 2: Excellence

Company leaders and human resources professionals must adopt best practices that allow companies to attract talented individuals, retain them at challenging remote locations, and facilitate their movement from one region to another.

Theme 3: Sustainability

To grow and prosper, industry must have access to vital resources when it needs them. Those resources take many forms, including natural resources, innovative technology, investment capital, and human resources. The sustainability of the industry therefore depends, in part, on the identification and resolution of human resources challenges.

Theme 4: Optimization

Industry optimization must be a proactive, long-term strategy. Optimization means maximizing profit, leveraging technology to improve efficiency and automate labour-intensive processes, and possessing the right people at the right time for the jobs at hand.

Key Human Resource Issues

Seven key human resource issues need to be addressed:

1. Promoting Careers in the Industry

Attracting new employees into the industry is critical to getting the right skills to the right region when they are needed. New entrants in some key occupations are needed to ensure that expected labour demand can be met under economic scenarios.

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[1] Human Resources in the Upstream Oil & Gas Industry, Human Resources Development Canada, September, 1992.

2. Access to Non-traditional Workforce

The industry is under-utilizing potential sources of labour including women, Aboriginal Peoples, and new immigrants. These groups face barriers to entry into the upstream petroleum industry. These barriers must be addressed if under-utilized individuals are to become a ready source of additional labour.

3. Skills Shortages

There are skill shortages in a number of occupational areas already, or will be soon. The current shortage of trades workers will be worsened by demanding construction cycles in both the oil and gas industry and other industries. A critical shortage of heavy equipment operators, process operators, heavy duty mechanics and power engineers will occur with the growth of the Oil Sands. The industry currently experiences shortages of workers in drilling and in the seismic and service sectors. “Hot skills” continue to materialize in skilled and professional occupations and must be addressed more creatively than in the past.

4. Labour Market Information Gaps

East Coast, Oil Sands and the North have completed labour demand forecasting, but there is no comparable labour market data for the WCSB. This affects industry’s ability to complete regular, industry-wide forecasting of labour supply/demand. Access to such information would allow educational programs to align better with industry needs. It would also facilitate analysis of high demand occupational risks so industry could respond with strategies that alleviate the pressure of an aging population.

5. Shifting Skill Requirements

Composition and competency requirements of positions will change in response to changes in business, the regulatory environment, and technology. Firms with few or no designated training personnel are particularly challenged to support their employees in making those transitions.

6. Mobility of Workforce

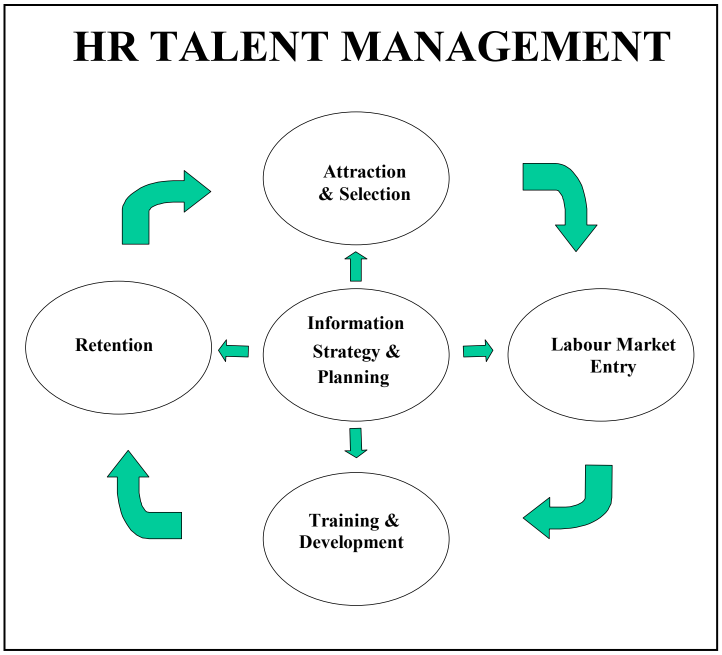
The mobility of employees will be a key factor in getting the right skills to the right regions when they are needed.

7. Creative Human Resources Practices

The oil and gas industry has traditionally responded to labour shortages or other human resources pressures with competitive compensation programs. The industry will need more creative solutions to employee attraction and retention.

Summary of Recommendations

The following summary of recommendations is linked to the key challenges and practices needed to manage human resources, as shown in the following schematic. This is the Human Resources Talent Management model developed as part of the study. Each element of the model is explained later in the report.



		HUMAN RESOURCES TALENT MANAGEMENT MODEL PRIORITY	
		Information, Strategy and Planning	Labour Market Entry
KEY ISSUES	Access to Non-Traditional Workforce	not applicable	Facilitate discussion among stakeholders to develop targeted prerequisite and bridging programs that meet the cultural needs of the Aboriginal Peoples and the occupational needs of the region so that Aboriginal candidates qualify for training and employment opportunities. Work with government, industry and stakeholder associations to integrate and provide access to information and contacts with respect to recognition of foreign education and/or experience in Canadian oil- and gas-related professional and trade associations.
	Skills Shortages	not applicable	Explore potential partnerships to share labour resources with industries that operate during the WCSB off-season and experience the same challenge of attracting and retaining workers.

		HUMAN RESOURCES TALENT MANAGEMENT MODEL PRIORITY	
		Information, Strategy and Planning	**Labour Market Entry**
	Labour Market Information Gaps	Collect and analyze data on an ongoing basis on labour demands mapped to NOC codes or industry-identified categories so that gaps in supply are identified and annual action plans developed to address the gaps. Establish a forum of educators and industry to consider the potential for developing a national strategy on the delivery of oil and gas programs so that appropriate technical and/or academic programs are identified and strengthened or developed to address workforce demands of the industry. Develop an understanding of the nature and composition of the contractor workforce to better prepare for issues that may arise with skill shortages.	not applicable
	Creative Human Resources Practices	Establish a central source to collect and communicate best practice information, thus facilitating industry and stakeholder access of this information.	Work with industry to ensure openings for on-site work experience and internships. Create a clearinghouse for educational institutions and employers to list workplace experience opportunities for students.

		HUMAN RESOURCES TALENT MANAGEMENT MODEL PRIORITY	
		Attraction & Selection	**Retention**
KEY ISSUES	Promoting Careers in the Industry	Within each region, develop an information strategy to communicate with potential entrants, their parents and others who play a role in influencing career choices.	not applicable
	Access to Non-Traditional Workforce	Work with industry to attract under-represented groups (e.g. women, Aboriginal Peoples, immigrants) to augment the traditional labour pool and to provide access to employment to these groups. Work with government, industry and immigrant associations to identify barriers and support solutions for new immigrants that attract and retain them for work in locations outside of the existing support infrastructure. *This is also a retention priority.*	Work with industry associations and stakeholder groups to establish industry standards and resources (such as harassment policies) that foster a respectful work environment to attract and retain a non-traditional workforce. Evaluate current approaches to retention of Aboriginal workers to improve retention and career progression in preparation for increased participation in the workforce.
	Skills Shortages	Develop prior learning assessment tools to asses the skills of the semi-skilled workforce to improve attraction and retention and to streamline the selection process. *This is also a training & development priority.*	not applicable

	HUMAN RESOURCES TALENT MANAGEMENT MODEL PRIORITY	
	Attraction & Selection	**Retention**
Shifting Skill Requirements	Establish baseline or entry requirements for workers so there is greater awareness of the requirements of the industry (e.g. essential employability skills; mandatory certificates or training; other aptitudes.)	not applicable
Mobility of Workforce	Employ strategies to attract, develop and sustain an appropriate workforce in remote areas to ensure an adequate supply of continuous labour. This could include pre-assessment tools and screening practices that involve educating candidates and their families about the realities of the work and social environment. *This is also a retention priority.*	Trades that are part of the upstream petroleum sector should be included in the Red Seal Program and trades workers encouraged to get their inter-provincial or inter-territorial tickets, so that labour mobility and the ability to meet regional demand are enhanced.
Creative Human Resources Practices	not applicable	Work with stakeholders to assess and share best practices information and develop workplace integration programs for attraction and retention of non-traditional workforce into the industry. Find ways to keep at least a core northern workforce employed year-round to keep northerners engaged in the industry.

		HUMAN RESOURCES TALENT MANAGEMENT MODEL PRIORITY Training & Development
KEY ISSUES	Promoting Careers in the Industry	Collaborate with the K-12 education system to explore opportunities for industry to provide practical application examples for curriculum so that students and educators can obtain a better understanding of how math and science are applied.
	Access to Non-Traditional Workforce	Develop a standard assessment tool and program model to be used to develop targeted programming that addresses attraction and retention barriers for non-traditional workforces. Components to consider include: education upgrading; technical skill development; language skills; employability/essential skills.
	Skills Shortages	Work with industry to establish occupational standards, apprenticeship, competency, and certification and training programs for occupations where supply gaps exist or will exist to improve workforce mobility, career path options and training consistency. Conduct an analysis of the completion rates for oil-and gas-related apprenticeships (generally low) to identify the reasons, barriers and opportunities to increase overall journey certified workers.
	Shifting Skill Requirements	Collaborate with educational institutions to identify the key training needs of each sector and identify opportunities for local colleges, institutes and universities to provide training to employees. Develop a common set of leadership skills, competencies and personal attributes so a pool of future leaders can be developed to ensure operational excellence within the industry. Develop and implement flexible learning approaches including e-learning and distance delivery so that workers, especially in remote locations, have access to ongoing training and development opportunities.

Considerations

The study also revealed a number of suggestions for change that lie more within the realm of industry, government, education providers and corporate human resources than the mandate of the Petroleum Council. These are offered as considerations for those stakeholders.

Best Practices

Operational excellence is an approach industry has taken to improve the efficiency and effectiveness of its products and service delivery. Best practices in many disciplines have come from this focus on continuous improvement.

The report provides a sampling of human resources best practices from leading organizations of all types, and best and unique human resources practices from within the upstream petroleum industry itself.

Next Steps

The Petroleum Human Resources Council of Canada was established to be a catalyst for change and a vehicle for collaborative action that assists the upstream petroleum industry in continuing to develop a qualified, motivated and agile workforce.

This study underscores the importance of collaborative efforts. In industries where the business environment is highly competitive, such as the oil and gas industry, collaboration can be difficult to achieve. The Petroleum Council, whose leadership structure incorporates all sectors of the industry in Canada, including workers, is well positioned to lead in building collaboration, broad stakeholder involvement and improved connectedness in the industry.

Now that this study and consultation with the Steering Committee has resulted in recommendations and considerations to address human resources issues within the industry as a whole and within the regions, the Petroleum Council will host a series of events that offer industry and other stakeholders the opportunity to participate in and learn more about the study findings, issues and recommendations. The events include:

- a series of regional meetings for industry and other stakeholders at Fort St. John, BC; Inuvik, NT; Fort McMurray, AB; Calgary, AB; London, ON; Halifax, NS; and St. John’s, NL; and
- meetings with the Petroleum Council member organizations.

In hosting these events, the Council will work closely with industry, funding partners and other stakeholders to set priorities, and develop and implement action plans that address the human resources issues identified in the study on a priority basis.

The plans will be presented at two launch events:

- an information breakfast for executives from industry and other stakeholder groups; and
- an information lunch for interested stakeholders.

The action plans will be part of a broader national upstream industry human resources strategy that will address critical issues and build a platform for future industry growth and sustainable, attractive employment.

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