



Field Surveillance and Operations Branch Provincial Summary 2009

August 2010



ENERGY RESOURCES CONSERVATION BOARD
ST57-2010: Field Surveillance and Operations Branch Provincial Summary 2009

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640 – 5 Avenue SW
Calgary, Alberta
T2P 3G4

Telephone: 403-297-8311
Fax: 403-297-7040
E-mail: infoservices@ercb.ca
Web site: www.ercb.ca

For media inquiries, contact Darin Barter at 403-297-4116.

For inquiries on the report, contact the Customer Contact Centre at 403-297-8311.

Contents

Executive Summary	iv
1 Introduction.....	1
2 The FSOB	2
2.1 Chief Operations Engineer and Technical Engineer	2
2.2 Field Operations Group.....	2
2.3 Emergency Management Group	3
2.4 Technical Operations Group	3
2.5 Business Analysis, Systems, and Support Group.....	4
2.6 Liability Management Group.....	5
2.7 Advisory and Regulatory Change Group.....	5
3 Stakeholder Engagement	6
3.1 Community and Aboriginal Relations Activities	6
3.1.1 Community Relations.....	6
3.1.2 Aboriginal Relations	8
3.1.3 Hearing Support	9
3.2 Appropriate Dispute Resolution.....	10
3.3 Emergency Planning and Assessment Stakeholder Relations.....	10
3.4 Public Complaints	10
3.4.1 Complaint Follow-up	11
3.4.2 Types of Public Complaints	12
4 Emergency Management	15
4.1 Emergency Response Plan Review and Audit	15
4.2 Emergency Response Assessment Program.....	15
4.3 Setback Referrals	15
4.4 Field Incident Response Team	16
5 Industry Activity for 2009	17
5.1 Drilling and Servicing Activities	17
5.1.1 Well Control Occurrences	17
5.2 Primary Causes of Spills	21
5.3 Industry Pipeline Trends	23
5.3.1 Changes in Pipeline Jurisdiction	23
5.3.2 Pipeline Failures.....	23
6 2009 Compliance Results	25
6.1 Compliance Summary	26
6.2 Drilling Operations Inspection Results	26
6.3 Well Servicing Inspection Results	29
6.4 Well Site Inspection Results	31
6.4.1 Well Site Abandonment Inspection Results.....	32
6.4.2 Well Site—Licensees with Persistent Low Risk Noncompliances	32
6.4.3 Well Operations Auditing Results.....	32
6.5 Gas Facilities Inspection Results	32
6.5.1 Gas Facilities—Licensees with Persistent Low Risk Noncompliances	33
6.6 Oil Facilities Inspection Results.....	34
6.6.1 Oil Facilities—Licensees with Persistent Low Risk Noncompliances	35
6.7 Waste Facilities Inspection Results.....	35
6.7.1 Drilling Waste Management Inspection Results	36
6.8 Production Measurement Compliance Results	37
6.8.1 <i>Directive 060</i> GOR Greater Than 3000 m ³ /m ³ Audits	37

6.8.2	Flaring and Venting Results.....	38
6.8.3	Sulphur Recovery Efficiency and Results.....	38
6.8.4	Glycol Dehydrator Annual Inventory Assessment.....	38
6.9	Pipeline Inspection Results	39
6.9.1	Pipeline Construction and Pressure Testing Inspections.....	39
6.9.2	Pipeline Operations Inspections	39
6.9.3	Pipeline Contact Damage	39
6.9.4	Pipeline Failures.....	40
6.9.5	Spill and Release Statistics and Inspection Results.....	41
6.10	Air Monitoring Inspection and Compliance Results.....	44
6.11	Liability Management Rating Compliance Results	45
6.11.1	Orphan Levy Compliance Results.....	45
6.12	Unconventional Resources Inspection and Compliance Results	45
6.13	Enforcement Appeals.....	46
6.14	Voluntary Self-Disclosure.....	46
6.14.1	Voluntary Self-Disclosure Form	47
7	FSOB Activity Highlights	48
7.1	Field Operations—Environmental Protection.....	48
7.2	Field Operations—Mobile Ambient Air Quality Monitoring.....	48
7.3	Pipeline Operations	48
7.3.1	Pipeline Integrity Management Program	50
7.3.2	ENFORM Industry Recommended Practice 17: Ground Disturbance and Damage Prevention	50
7.4	Well Operations	50
7.4.1	Well Operations Stakeholder Engagement	51
7.4.2	Well Abandonment and Reclamation	51
7.5	Production Operations.....	51
7.5.1	Sulphur Recovery/Gas Plant Performance	51
7.5.2	Sulphur Recovery Efficiencies.....	52
7.5.3	Production Measurement	52
7.6	Unconventional Resources—In Situ Heavy Oil/Oil Sands.....	52
8	2009 Regulatory Reform and Major Initiatives	54
8.1	Regulatory Reform.....	54
8.2	Major Initiatives	56
8.2.1	Enhanced Production Audit Program.....	56
8.2.2	Flaring and Venting Review Project.....	56
8.2.3	Provincial Inspection Team Initiatives.....	57
8.2.4	Pipeline Operations Initiative.....	57
8.2.5	Legacy Initiative.....	57
8.2.6	Liability Management Group Initiatives	58

Tables

1	ERP approval activity, 2009	15
2	Length of pipelines by type in Alberta under ERCB jurisdiction (km)	23
3	FSOB compliance summary, 2009	27
4	Facilities and operations shut down by FSOB request, 2009	28
5	Well Operations auditing activities and compliance results, 2009	32
6	Production measurement and reporting audits and compliance results, 2005-2009.....	37
7	<i>Directive 060</i> GOR greater than 3000 m ³ /m ³ and compliance results, 2006-2009.....	38
8	<i>Directive 060</i> economic evaluation audits and compliance results, 2005-2009	38
9	Sulphur recovery and compliance, 2005-2009	38
10	Failures reported from January 1 to December 31, 2009.....	41

11	Pipeline release, 2009 (percentage of total).....	43
12	LMR and compliance results, 2006-2009	45
13	Orphan Levy and compliance results, 2005-2009	45
14	Enforcement appeals by year.....	46
15	Technical Pipeline Operations activities during 2009	49
16	Total <i>Directive 056</i> pipeline application referrals by year	50

Figures

1	Branch organization	2
2	Community relations activities	6
3	Inspections, complaints, and releases handled on aboriginal lands/territory	9
4	Public complaints and complaint issues	11
5	Distribution of complaints by most common concerns	12
6	Complaints related to well sites, 2009	13
7	Oil facilities—odour and smoke/flaring complaints	13
8	Complaints related to gas facilities, 2009	14
9	Drilling activity levels	17
10	Drilling blowouts	18
11	Kicks per 1000 wells.....	19
12	Servicing blowouts	20
13	Other blowouts.....	21
14	Spills by source and failure type, 2009.....	22
15	Reported volumes of produced water and liquid hydrocarbon spills.....	22
16	Historical pipeline failures by product being transported.....	24
17	Failures compared to total pipeline length.....	24
18	ERCB drilling inspection results	28
19	High risk noncompliances on drilling rigs.....	29
20	Drilling—most common high risk noncompliances, 2009	29
21	ERCB well servicing operations inspection results	30
22	Well servicing—most common high risk noncompliances, 2009	30
23	Well site—most common high risk noncompliances, 2009	31
24	Gas facilities—most common high risk noncompliances, 2009	33
25	Oil facilities—inventory and inspections.....	34
26	Oil facilities—high and low risk noncompliances by percentage of total inspections	35
27	Waste management facility inspections and results.....	36
28	Pipeline contact damage	40
29	Priority ratings for pipeline releases	42
30	Number of spills from upstream oil and gas sources	43
31	Air monitoring results and compliance rates	44
32	Efficiency versus emissions of sulphur recovery plants	52

Executive Summary

The Energy Resources Conservation Board (ERCB/Board) remains committed to ensuring that energy development in Alberta occurs in a manner that is fair, responsible, in the public interest, and, above all, carried out in a way that is safe for Albertans and the environment.

To help fulfill this commitment, in June 2009 the Board introduced a new vision for the ERCB: to be the best nonconventional energy regulator in the world by 2013. This vision is in response to three key drivers in the energy sector:

- 1) a resource base that is changing from conventional energy sources to unconventional sources, such as natural gas from coal and shale (or tight gas) and oil sands,
- 2) a critical need to manage legacy assets more effectively, and
- 3) an increasing demand for regulatory reform.

To meet the new operational requirements, the ERCB was restructured and the Field Surveillance and Operations Branch (FSOB) was created. The FSOB combines most of the former Public Safety/Field Surveillance and Compliance, Environment, and Operations Branches.

Operating from the Calgary Head Office, Fort McMurray Regional Office, and nine ERCB Field Centres throughout Alberta, FSOB field staff inspect and audit construction, operation, and abandonment activities at oil, gas, and in situ oil sands facilities and pipelines.

FSOB now monitors about 393 359 wells, 23 896 oil batteries and associated satellites, 787 gas plants, 19 776 gas batteries, 3609 compressor stations, and nearly 400 000 kilometres (km) of pipelines.

Inspection and Performance

ERCB staff carried out a record 25 373 field inspections and audits in 2009, compared to 18 667 inspections in 2008.

There was a slight increase in 2009, compared to 2008, in the high risk compliance rates. This can partially be attributed to the proactive compliance of licensees, as well as operator awareness sessions conducted by the FSOB.

In 2009, the ERCB suspended 127 energy facilities, pipelines, and operations that did not meet the ERCB's stringent regulatory requirements.

The number of public complaints received in 2009 was 643, compared to 744 in 2008. The ERCB responds to 100 per cent of complaints and concerns.

There were a total of 102 Appropriate Dispute Resolution files in 2009, of which 88 were successfully resolved, representing a resolution rate of 86 per cent.

In 2009, a total of 7232 wells were drilled, compared to 15 417 wells in 2008. This 53 per cent decrease in drilling activity (8185 fewer wells) was due to declining conventional reserves, low gas prices, and the global economic situation.

In 2009, there were 23 blowouts out of a total of 246 156 nonabandoned wells in Alberta.

- Four blowouts occurred during drilling operations (0.56 blowouts per 1000 wells drilled), which is a decrease from nine in 2008.
- Five blowouts occurred during well servicing operations, all of which were sweet gas releases.
- Fourteen blowouts occurred for reasons not related to drilling or servicing, including third-party damage, equipment failure, and well design issues. Of these 14 blowouts, 12 were sweet and 2 were sour. The majority of these were of short duration with minimal public and environmental impact.

There were increased shutdowns on service rig operations. The total shutdown time of well servicing operations in 2009 was nearly 27 hours, compared to 3 hours in 2008.

The 2009 record-low pipeline failure rate of 1.7 per 1000 km of pipeline was better than the previous record low of 2.1 set in both 2008 and 2007.

In 2009, there were 3720 gas facility inspections, compared to 2023 inspections in 2008, representing a 46 per cent increase. The percentage of facilities in compliance in 2009 was 73.6, while in 2008 it was 64.3.

There were increased oil facility inspections in 2009, with 4695 inspections completed. Of the facilities inspected, 78.3 per cent were in compliance.

Regarding well abandonment and reclamation, in 2009

- the current owner of the historical Turner Valley plant site, under direction from the Well Operations Section, properly abandoned the leaking Dingman #2 well,
- the final phase of the Bromley Marr Waste Facility cleanup near Bonnyville was completed, and
- a reclamation certificate was granted to the ERCB for the stratigraphic test hole that was drilled in preparation for the ERCB Peace River well control project.

Emergency Management

In 2009, the FSOB increased its efforts in the area of emergency management with enhanced capacity in air dispersion modelling to support *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry* and to accommodate the expansion of the role of the Field Incident Response Team (FIRST). FIRST provides training and exercises for ERCB staff and works with external emergency management partners to provide a coordinated response to petroleum industry incidents.

FIRST assisted the Government of Alberta during the 2009 spring fire season and contributed to the development of the Emergency Management Decision Support Initiative and a software program designed to manage information and communication among multiple agencies during emergencies.

Legacy

With the decline of conventional oil and gas reserves, many FSOB staff in 2009 represented the ERCB in the Government of Alberta Regulatory Alignment and Enhancement Project to determine appropriate timelines for the abandonment,

remediation, and reclamation of inactive wells and the related upstream infrastructure in Alberta.

Regulatory Reform

The goal of regulatory reform is to provide industry with clear, concise requirements that are easy to understand and lead to improved compliance in the interests of public safety, environmental protection, and resource conservation. In 2009, the FSOB participated in the review, development, or rewrite of 16 regulatory initiatives.

1 Introduction

The introduction of the new vision for the Energy Resources Conservation Board (ERCB/Board) to be the best nonconventional regulator in the world by 2013 resulted in the creation of the Field Surveillance and Operations Branch (FSOB) in June 2009. The FSOB combines the former Public Safety/Field Surveillance and the Compliance, Environment, and Operations Branches.

This report details the organizational shift to the FSOB, the oil and gas industry's compliance with ERCB requirements for which the FSOB is responsible, and the wide range of activities and initiatives carried out by FSOB staff in 2009.

The Industry Activity section describes key industry performance indicators, some within the context of 5-year trends.

Then, to accurately reflect the branch activities, this report integrates the compliance results of the FSOB. Annual compliance statistics for each group prior to 2009 are in *ST99: Proactive Compliance Report* and *ST57: Field Surveillance Provincial Summary*.

The FSOB Activity Highlights section describes some of the key activities in which the Field Operations and Technical Operations Groups were engaged.

The report ends with a discussion of the significant number of regulatory reforms and other initiatives led by the FSOB in 2009.

Because an ERCB reorganization occurred mid-year, the 2009 report is transitional and covers activity of the past year, as well as looks ahead to future developments as the FSOB moves toward achieving the new ERCB vision. In future years, the FSOB will report on further regulatory change initiatives, process streamlining, and proactive compliance activities.

2 The FSOB

The FSOB joins over 200 highly trained professionals into a team that provides technical expertise, advice, and support to a broad range of internal and external stakeholders. They include engineers, scientists, technicians, technologists, field inspectors, regulatory reform and systems specialists, business analysts, and support staff.

FSOB staff respond to incidents and public complaints on a 24-hour basis.

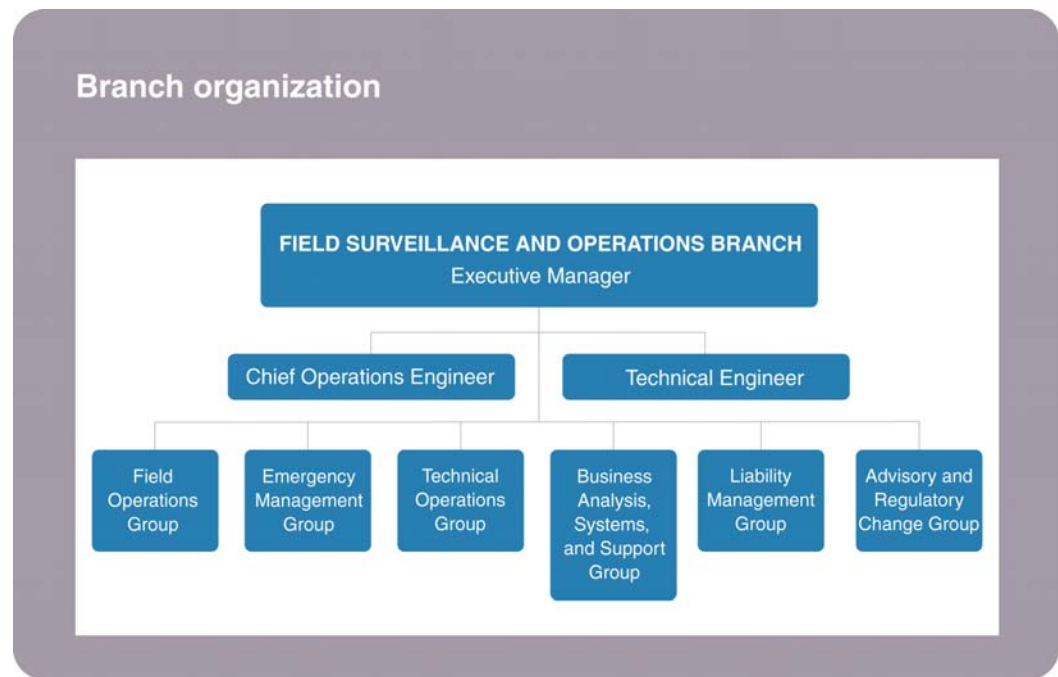


Figure 1

2.1 Chief Operations Engineer and Technical Engineer

The Chief Operations Engineer and Technical Engineer monitor, evaluate, and communicate trends and changes in the upstream oil and gas industry, network with relevant regulatory agencies, and develop appropriate strategies to ensure the effectiveness of the ERCB's technical capacity.

2.2 Field Operations Group

The Field Operations Group is divided into three sections.

Field Surveillance

From the nine ERCB Field Centres, Calgary Head Office, and the Fort McMurray Regional Office, Field Surveillance field staff

- conduct inspections of construction, operational, and abandonment activities at oil, gas, mining, and in situ oil sands facilities and pipelines;
- respond to and monitor emergencies, incidents, spills, releases, and public complaints on a 24-hour basis;
- improve industry performance and minimize potential impacts on public safety and the environment; and

- proactively conduct licensee awareness and education sessions to foster community awareness and increase industry's understanding of ERCB requirements and the consequences for noncompliance.

The FSOB Safety Coordinator ensures that staff complete all required in-house safety training, that they adhere to the provincial safety standards, and that all field vehicles are equipped with safety equipment. A hazard identification protocol helps staff identify potential risks inherent in the workplace or on site.

Community and Aboriginal Relations

The Community and Aboriginal Relations (CAR) team has a key role to engage with community and aboriginal stakeholders to address their concerns and ensure a solid understanding of the ERCB mandate and its processes.

Appropriate Dispute Resolution

The Appropriate Dispute Resolution (ADR) team delivers the ERCB's mediation program to help stakeholders understand and explore concerns and encourage interest-based dispute resolution. Impacted people and companies can achieve balanced and mutually acceptable solutions by facilitated discussions with ERCB staff and independent third-party mediators.

2.3 Emergency Management Group

The Emergency Management Group comprises two teams.

Emergency Planning and Assessment

Emergency Planning and Assessment (EPA) staff ensure that oil and gas companies have adequate emergency response planning and preparedness. The team reviews emergency response plans (ERPs), which includes confirming that they meet the requirements in *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry*, issues approvals, conducts assessments, and processes setback referrals.

Field Incident Response Support Team

The Field Incident Response Support Team (FIRST) prepares and responds to major petroleum industry incidents. It focuses on safety, exercises, training, communications, incident command, air monitoring, and investigations.

2.4 Technical Operations Group

The Technical Operations Group comprises four sections.

Pipeline Operations

The Pipeline Operations Section guides the direction of technical requirements for pipeline design, construction, and maintenance in Alberta. Staff participate in a number of technical committees to address issues with industry and other regulatory bodies. Staff also review integrity management and failure prevention programs, perform investigations, review applications, and provide technical expertise and advice to ERCB hearing panels.

Production Operations

The Production Operations Section ensures that upstream oil and gas production facilities are operated in compliance with ERCB regulations and requirements.

The Flaring and Venting team monitors facilities that report excess flaring volumes, verifies the economic viability of solution gas conservation, and processes well test permit applications for well test flaring and venting and royalty waiver application referrals from Alberta Energy.

The Gas Plant Performance team enforces gas plant regulations and monitors the reduction of benzene emissions from glycol dehydrators and the reduction of fugitive emissions, and issues quarterly sulphur recovery efficiency guidelines.

The Production Measurement and Reporting team verifies industry's compliance with measurement and reporting requirements and conducts industry audits selected through a risk-based audit protocol or upon stakeholder request.

The Production Audit team executes the Enhanced Production Audit Program (EPAP), which monitors and assesses industry compliance with ERCB volumetric measurement and reporting rules and regulations.

Well Operations

The Well Operations Section provides technical expertise related to the safe drilling, completion, operation, and abandonment of all oil and gas wells in the province. This includes

- technical analysis of nonroutine abandonment, casing repair, isolation packer, surface casing vent flow, and gas migration remedial applications;
- evaluation of requests for variance from existing drilling and servicing requirements;
- review of critical sour drilling and completion plans, with special attention to casing design and equipment specifications; and
- technical guidance for well suspension requirements and shallow fracturing operations.

Compliance Assurance

The Compliance Assurance Section administers and maintains *Directive 019: ERCB Compliance Assurance—Enforcement* to ensure that ERCB compliance assurance policies are applied fairly, consistently, and effectively. The Enforcement Advisor is responsible for the enforcement appeal process.

2.5 Business Analysis, Systems, and Support Group

The Business Analysis, Systems, and Support (BASS) Group is responsible for

- technical evaluation of operational requirements,
- business analysis, including information trending/forecasting and statistics, and
- development and sustainment of FSOB information systems.

2.6 Liability Management Group

The Liability Management Group is mandated to limit and manage the potential financial liability risk to the public of Alberta from the suspension, abandonment, remediation, and reclamation of wells, facilities, and pipelines. The group is organized in two sections.

The Liability Management Section develops, implements, and administers liability management programs in industry sectors regulated by the ERCB. It establishes security collection protocols when potential financial liability risks of licensees are identified.

The Corporate Enforcement Section conducts high-level enforcement actions that have been escalated through the *Directive 019* process on behalf of all ERCB groups. It designates wells, facilities, and pipelines as orphans when no responsible party exists for reclamation by the Orphan Well Association.

2.7 Advisory and Regulatory Change Group

The Advisory and Regulatory Change Group supports and advises the FSOB on strategic priorities to fulfill regulatory and operational needs. The group provides regulatory change management, strategic and technical advice, portfolio management, publication management, and support for the ERCB Integrated Talent Management Program.

3 Stakeholder Engagement

3.1 Community and Aboriginal Relations Activities

3.1.1 Community Relations

The CAR team engages stakeholders to ensure understanding of the ERCB's mandate and its processes. This is achieved through various activities, ranging from kitchen table discussions to large-scale community meetings. CAR also helps to establish new relationships and enhance existing ones by creating a dialogue among the interested parties. Another key role of the CAR team is collaborating with stakeholders to ensure that their concerns and feedback regarding the ERCB are heard.

CAR increased its engagement with stakeholders in 2009 (see Figure 2) as a result of a fully trained and qualified team, the unified development and timely delivery of key messages, and the development of a system for effective measurement of activities.

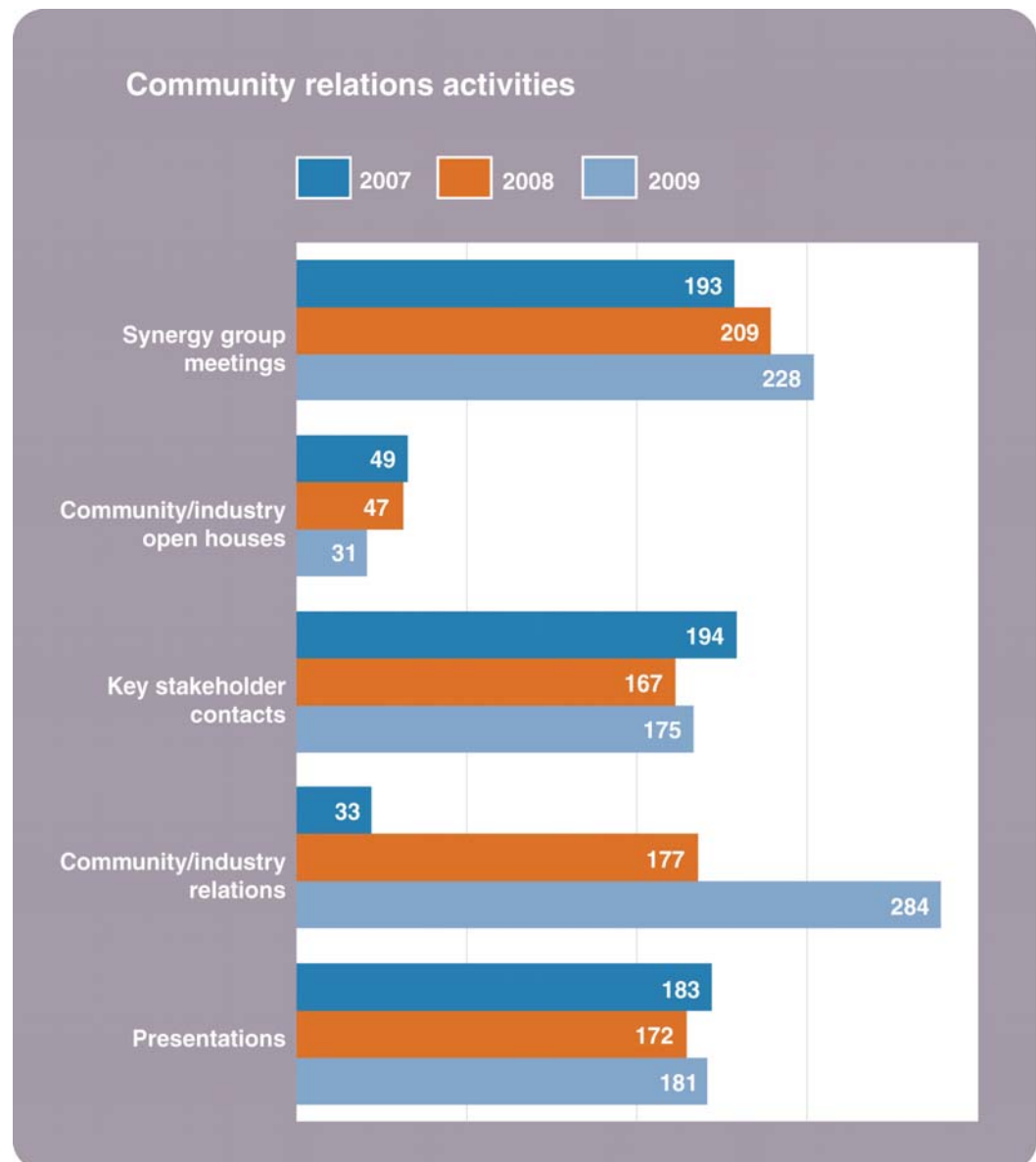


Figure 2

Synergy Groups

To ensure that the impact of resource development and operations is minimized, synergy groups are established to identify issues and work collaboratively on solutions to concerns identified. Synergy groups usually involve public, industry, and government representatives and provide a forum for all participants to enhance relationships, exchange information, and share knowledge.

The size, structure, and membership of synergy groups depend on such factors as population, industry activity, geographic location, and sensitivity of an area. FSOB staff attended 228 synergy group meetings in 2009. The ERCB strongly endorses this effective and cooperative approach.

For more information on synergy groups and related events in Alberta, see the Synergy Alberta Web site at www.synergyalberta.ca.

Open Houses

In 2009, the ERCB held one open house at the Pine Lake Community Hall in central Alberta. Staff from the Red Deer Field Centre and CAR provided information on ERCB roles, responsibilities, and regulations. Several displays showcased the ERCB's state-of-the-art air monitoring unit, geological research samples, and other pertinent information. Several ERCB staff from the Head Office also participated in the event to meet stakeholders and provide an opportunity for their concerns to be heard.

CAR staff also participated in 31 community/industry open houses in 2009. These open houses are normally held to discuss a specific proposed development. Attendance by CAR staff at these events provides Albertans with the opportunity to speak with ERCB staff members about questions or concerns. These events also enable CAR staff to gather information on the proposed development to share with their local Field Centre staff inspectors.

CAR staff will continue to attend community/industry open houses to increase awareness of the ERCB's roles and responsibilities when proposals for new development in Alberta communities arise.

Key Stakeholder Contacts

In 2009, CAR staff contacted 175 key stakeholders, discussing the ERCB's roles and responsibilities. Key stakeholders included elected municipal and provincial officials and other government agencies.

Presentations by CAR staff in 2009 incorporated changes to ERCB directives, including the new edition of *Directive 071*, ERCB roles and responsibilities, the ERCB's air monitoring program, Alberta's cross-jurisdictional regulatory framework, and landowner rights.

The field staff made 82 contacts with members of the public who live within emergency planning zones to inform them of the results of sour facility inspections conducted in their area. The field staff also participated in 34 industry emergency response exercises to educate industry and simulate the ERCB's role in an oil and gas incident.

A more focused effort to participate in trade shows also occurred in 2009. Staff made numerous contacts at the 19 trade shows they attended. Staff also participated in conferences hosted by the Alberta Association of Municipal Districts and Counties, the

Alberta Urban Municipalities Association, and Synergy Alberta, as well as various agricultural conferences. These conferences are especially beneficial, as staff have the opportunity to interact with many stakeholders in a face-to-face setting.

In the coming year, the CAR team will continue to attend such events in an effort to reach larger audiences throughout the province and share key messages related to the upstream oil and gas industry.

Community/Industry Relations

The CAR team participates in many smaller scale meetings and conversations, often with only the licensee, resident, and/or landowner, in an effort to provide information, clarify rules and regulations, and encourage constructive relationships. Meeting one on one allows the parties to be more open in an informal setting while dealing with issues. In 2009, staff took part in 284 such meetings and conversations.

When staff recognize the need to improve the dialogue between landowners and industry, they often refer the parties to the ERCB ADR team. With specialized skills in conflict resolution, the ADR team is able to engage the parties to help resolve specific matters at issue.

CAR staff also developed educational tools in 2009, such as an “EDU KIT” that has hands-on oil- and gas-related props that correspond to a slide show explaining oil and gas development. This presentation has been very successful in introducing the oil and gas industry to grade 4 students across Alberta.

3.1.2 Aboriginal Relations

The ERCB recognizes that there are unique protocols, traditions, and cultural differences of which staff must be aware when developing relationships with aboriginal communities. Various ERCB staff have been educated by local aboriginal people on topics including aboriginal history, culture, demographics, and current issues. Staff have also had the opportunity to engage in cultural events, such as powwows, sweats, and smudges. This training has had an enormous impact on staff, increasing understanding and awareness of the culture and traditions of aboriginal communities and the impact history has on current situations.

The ERCB Aboriginal Relations program has three components: education, awareness, and core business (responding to issues, concerns, and incidents) (see Figure 3). This program continues to build relationships with 47 First Nations, 8 Métis communities, and aboriginal organizations such as Indian Oil and Gas Canada.

In 2009, the ERCB continued its support of the Circle for Aboriginal Relations (CFAR) Society. CFAR works towards strengthening relationships among aboriginal communities, industry, and government members. Participants share information and best practices and create networking opportunities. CAR staff were presenters at CFAR’s 2009 conference and sat on the CFAR Board of Directors.

Two CAR staff are members of a stakeholder relations team for the Fort McMurray region. This team promotes open communication and dialogue and provides awareness of ERCB roles and responsibilities to First Nations, Métis, government agencies, and northern community groups. The team’s activities in 2009 included

- meeting with the Mikisew Cree First Nation, Athabasca Chipewyan First Nation, Nunee Health Board, Fort Chipewyan, Chard Métis local, Métis local #1935, Chipewyan Prairie Dene First Nation, Conklin Resources Development Advisory Committee, Fort McKay First Nation, and the Athabasca Tribal Council;
- attending events such as Treaty Days, the Keyano College open house, and Fort McMurray Fall Tourism Tradeshow;
- conducting a workshop regarding the ERCB application process for the regional First Nations; and
- participating in the Traditional Environmental Knowledge Multistakeholder Committee and the ERCB Aboriginal Working Group.

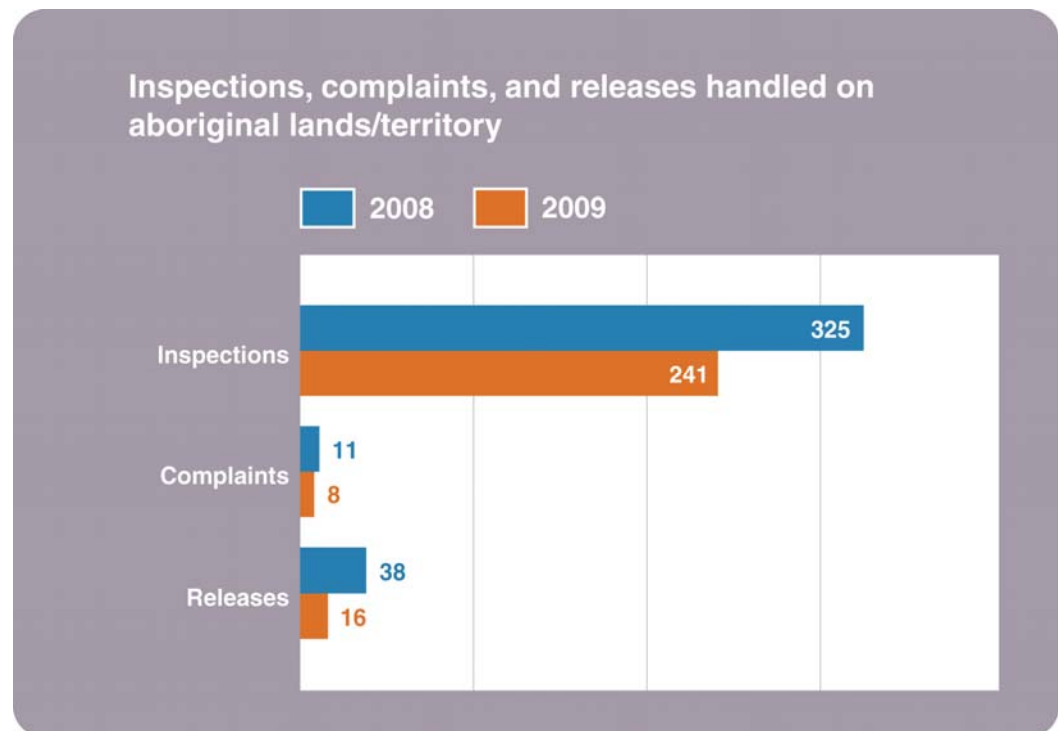


Figure 3

In 2010, staff will develop and coordinate internal aboriginal awareness sessions, focusing on aboriginal communities in Alberta. Staff will also work with other organizations and stakeholders across the province to provide similar aboriginal awareness training.

3.1.3 Hearing Support

FSOB staff continued to support the ERCB hearing process in 2009. While attending four hearings, staff were able to deal with secondary issues, allowing technical staff to deal specifically with the application before the Board panel.

In 2010, CAR staff will continue to provide hearing support to the Applications Branch. This will include establishing a communications protocol between the Field Centres, the CAR representative, and the Nonroutine Applications coordinator. Staff will also continue to educate the public about ERCB roles and responsibilities and to emphasize to industry the benefits and importance of proactive and effective communication with all stakeholders.

3.2 Appropriate Dispute Resolution

The ADR program creates an environment that fosters respectful discussions, which allows industry and landowners to successfully negotiate concerns regarding proposed energy activities. The main element of the ADR program is facilitation conducted by ERCB mediators or independent third-party mediators.

ADR enables potentially affected people and companies directly involved in oil and gas development to find their own unique solutions that balance the different interests and fit their specific situation. In most instances, industry and landowners are able to successfully resolve concerns regarding proposed energy activities.

In 2009, there were a total of 102 ADR files. ADR staff were able to facilitate the successful resolution of 88 files, a resolution rate of 86 per cent.

The success of the ADR program has been a direct contributor to the high number of cancelled hearings and has triggered a significant increase in the demand for facilitation.

3.3 Emergency Planning and Assessment Stakeholder Relations

In 2009, the EPA team met with stakeholders, including municipalities, licensees, land developers, and landowners, to explain the ERCB's Public Safety Management System and provide clarity on the sour gas setback referral process. Activities included

- attendance at workshops with regional planning authorities;
- engagement with provincial government agencies and local authorities at synergy group meetings and round-table discussions;
- involvement in the Government of Alberta initiatives to review the emergency management system in Alberta;
- review of the role of local authorities emergency partners; and
- support of industry and government initiatives, including the Oil and Gas Liaison Group, the City of Calgary Sour Gas Information Sharing Committee, and the Provincial Mutual Aid Committee.

3.4 Public Complaints

Responding to public complaints is an ERCB priority. Staff are available 24 hours a day to ensure prompt, effective, and lasting resolution to the issues identified, while also ensuring that the public and the environment are protected.

In 2009, the ERCB received complaints on a variety of issues regarding the upstream petroleum industry (see Figure 4).

The four most common concerns continued to be operational impact, odours, physical impact, and health issues (see Figure 5).

The decrease in public complaints over the past four years may be attributed to licensees implementing good-neighbour practices in their area of operations. These practices ensure that residents are kept informed of industry operations.



Figure 4

3.4.1 Complaint Follow-up

The ERCB conducts a monthly random complaint call-back survey as part of its effort to improve the level of satisfaction with both ERCB and industry response. Staff analyze the information to ensure that appropriate complaint response procedures are being used and any questions or concerns are addressed in a timely manner. If individuals were not satisfied by the response to their complaints, ERCB staff reviewed the situation to ensure that the complaints were addressed appropriately.

The 2009 survey showed that 68 per cent of survey participants said their concerns were satisfactorily resolved, a decrease from 83 per cent in 2008. It also indicated that 94 per cent of survey participants were satisfied with the response given by the ERCB, a slight decrease from 97 per cent in 2008.

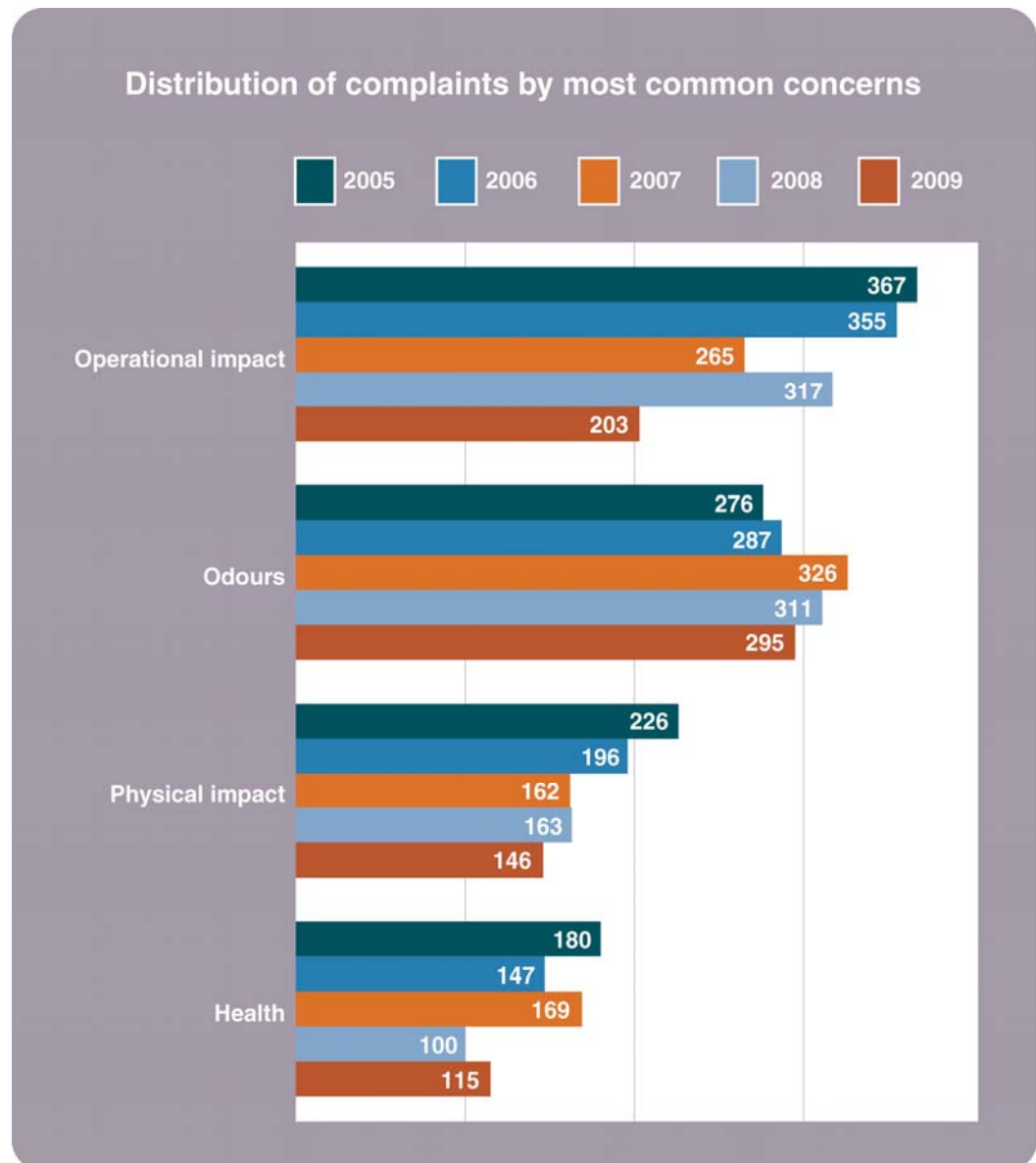


Figure 5

3.4.2 Types of Public Complaints

In 2009, well installations constituted 30 per cent of public complaints.

The ERCB also received a number of complaints where an investigation could not determine the source (odours). Such complaints are categorized as “source undetermined.” In 2009, 30 per cent of all public complaints received could not be linked to a specific source or facility.

Well Sites—Public Complaints

Figure 6 shows the breakdown of public well site complaints made in 2009. All complaints were investigated and enforcement applied where required.

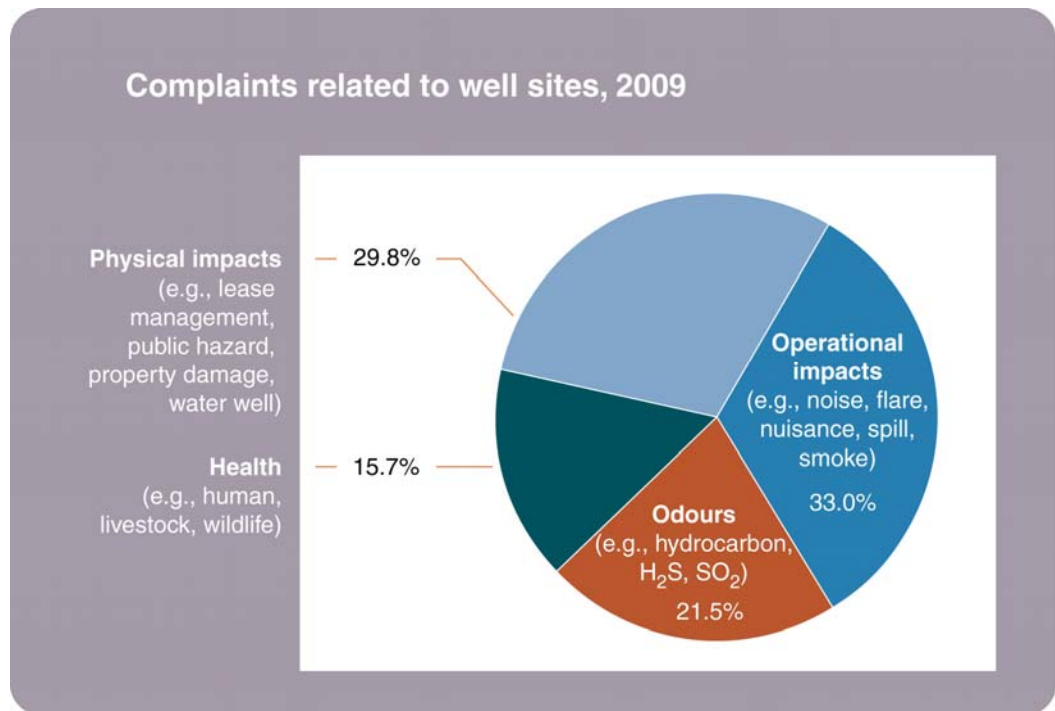


Figure 6

Oil Facilities—Public Complaints

In 2009, 10 oil facilities had multiple complaints related to odours and noise made against them, compared to 19 oil facilities in 2008. Where necessary, repairs and facility upgrades were made by the licensees to remedy the problems. The most common complaints continue to be odours and smoke/flaring. Figure 7 indicates the reduction in complaints from 2008.

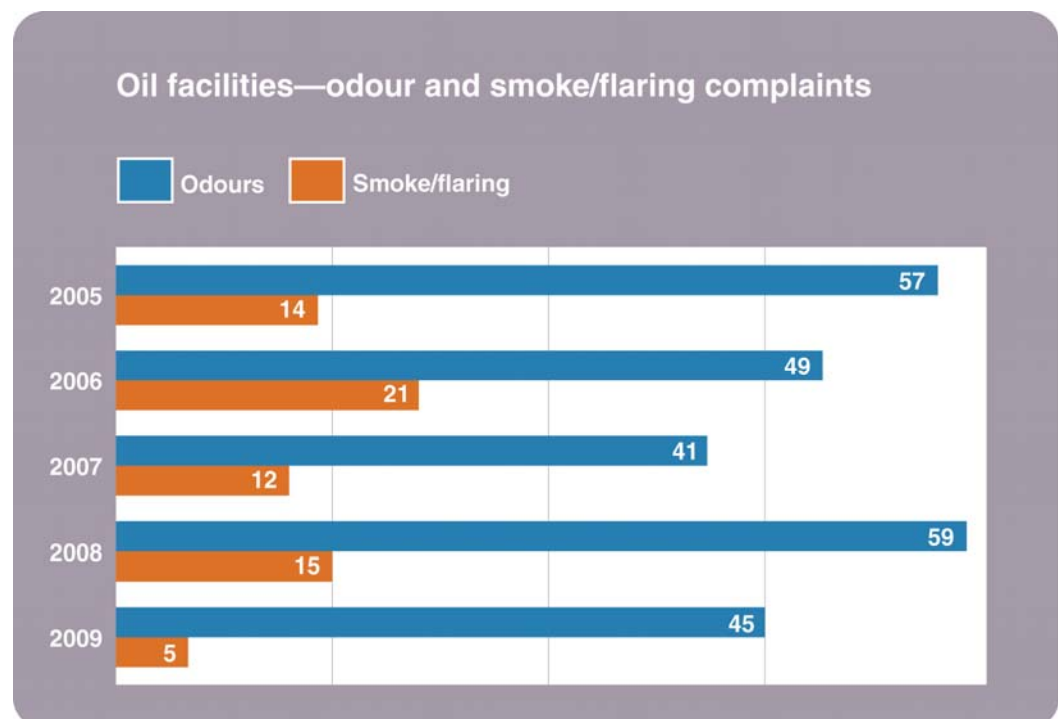


Figure 7

Gas Facilities—Public Complaints

In 2009, 106 public complaints related to gas facilities were registered with the ERCB. This was up slightly from 98 complaints in 2008. The most common complaints about gas facilities in 2009 are shown in Figure 8.

Thirteen gas facilities were identified with multiple complaints. Where necessary, repairs and facility upgrades were made by the licensees to remedy the problems. Facilities with multiple complaints are considered for detailed operational inspections in the inspection selection process for the coming year.

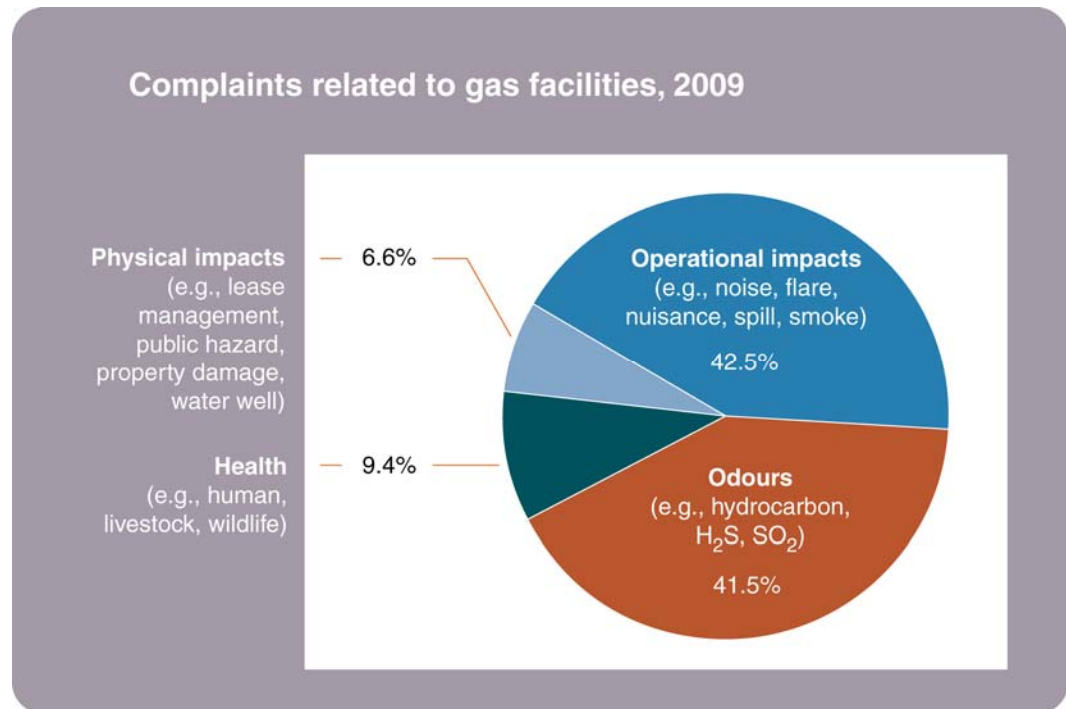


Figure 8

Drilling and Servicing—Public Complaints

In 2009, staff investigated 30 complaints related to drilling and servicing of wells. This compares to 52 complaints in 2008. Causes of the complaints included property damage, flaring, and dust created by drilling and service rig operations.

Pipeline Operations—Public Complaints

There were 51 complaints associated with pipeline operations in 2009, down from 66 received in 2008. The complaints were mainly related to pipeline odours, spills from pipeline failures, and right-of-way maintenance.

4 Emergency Management

In 2009, EPA staff

- hired a professional engineer with plume dispersion expertise,
- issued a new version of the ERCBH2S air dispersion model for testing and feedback, and
- issued an errata to [Directive 071](#).

4.1 Emergency Response Plan Review and Audit

All ERPs must be technically complete before receiving approval; inaccurate or incomplete ERP applications are closed. In 2009, 19 applications were closed by the EPA and an additional 10 were withdrawn by the licensee (see Table 1).

Table 1. ERP approval activity, 2009

ERP type	Received	Approved	Closed	Withdrawn	Pending
Drilling/completion	107	49	8	6	44
Production facility	78	58	5	2	13
Supplements	88	77	5	2	4
High vapour pressure (HVP)	9	3	1	0	5
Total ERP activity	282	187	19	10	66

Following approval, an ERP may also be subject to a postapproval audit to ensure that all applicable [Directive 071](#) requirements have been met. An unsatisfactory audit may result in enforcement action under the provisions of [Directive 019](#), including possible suspension of operations.

ERPs are audited and assessed for compliance against the directive under which the ERP was approved. The four potential compliance categories are oil facilities, gas facilities, general requirements, and technical requirements.

Three high risk enforcement actions relating to ERPs were issued in 2009. Two occurred under the gas facility compliance category and one under technical requirements.

4.2 Emergency Response Assessment Program

The Emergency Response Assessment program tests a licensee's knowledge of its ERP and its emergency preparedness. In 2009, the EPA continued to enhance and expand the assessment program by conducting full assessments and postapproval audits on selected ERPs.

In 2009, the EPA conducted 12 full assessments and 164 postapproval audits. The deficiencies identified during these audits and assessments were largely addressed through additional training and exercise.

4.3 Setback Referrals

Setback referral inquiries are requests from local authorities for setback information for specific locations for subdivision or development.

In 2009, staff conducted 3728 setback referrals: 3406 were standard replies with no activity in the area; 322 were detailed replies.

4.4 Field Incident Response Team

In 2009, FIRST

- increased circulation of the Emergency Response Group Incident Notification reports to external emergency management partners;
- assisted in facilitating and participated in numerous Field Operations Group safety training and exercises that included many emergency management partners, such as municipalities, industry, mutual aid organizations, and other government agencies;
- supported the Government of Alberta during the 2009 spring fire season;
- developed a protocol with the Agency Response Readiness Centre to engage it in external notifications for significant petroleum industry incidents that involve evacuation of the public;
- contributed to the rewrite of the ERCB/National Energy Board (NEB) protocol to reflect the greater role the NEB has within the petroleum industry in Alberta;
- contributed significantly to the development of the Emergency Management Decision Support Initiative and a software program designed to manage information and communication during emergencies; and
- investigated and responded to several incidents and assisted with several Field Centre incident investigations.

In 2010, FIRST will continue to build better processes with internal staff, offer incident response training, and foster relationships with external emergency management partners.

5 Industry Activity for 2009

In addition to conducting inspections and audits, the ERCB collects a variety of data to assist staff in monitoring industry performance. The data are used to identify when changes to regulations, inspection procedures, or operating practices are required. This section details such activity. Most of the graphs in this section are included to provide historical context by illustrating the five-year trend in specific categories.

5.1 Drilling and Servicing Activities

The ERCB witnessed a significant decrease in drilling activity in 2009, with 7232 wells drilled. This continues the downward trend that began in 2005 (see Figure 9). Declining conventional reserves, the low price of gas, and the global economic situation factored into the sharp drop in 2009. The ERCB and industry continue to focus on drilling and servicing wells safely, with minimal impact on the environment and the public.

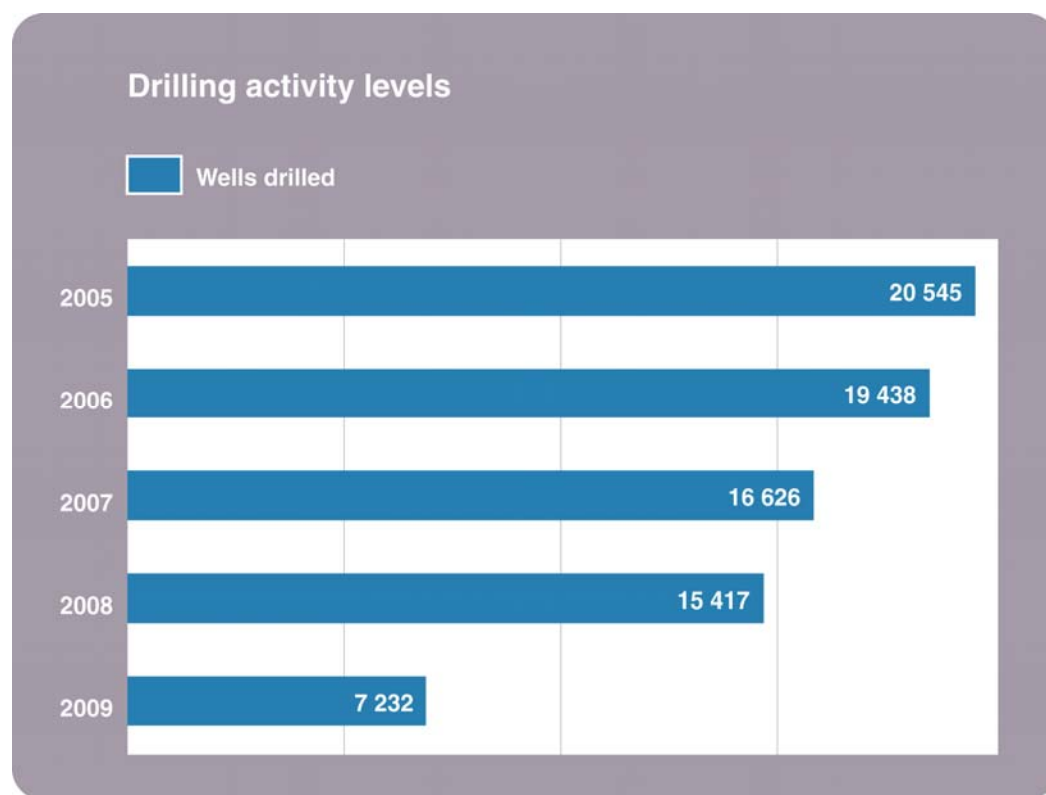


Figure 9

5.1.1 Well Control Occurrences

Well control data pertaining to kicks, blowouts, and industry's response to these incidents continue to be the primary indicators of industry's drilling, servicing, and operating performance.

A kick is any unexpected entry of water, gas, oil, or other formation fluid into a wellbore that is under control and can be circulated out during drilling operations.

A blowout is an unintended flowing of wellbore fluids (oil, gas, water, or other substance) at surface that cannot be controlled by existing wellhead and/or blowout prevention equipment, or a well that has fluids flowing from one formation to another formation that cannot be controlled by increasing the fluid density. Control can only be

regained by installing additional and/or replacing existing wellhead and/or blowout prevention equipment to allow shut-in or permit the circulation of control fluids or by drilling a relief well.

A well incident is not considered a blowout if the flow of fluids (oil, gas, water, or other substance) into the wellbore can be circulated out or bled off through the existing wellhead and/or blowout prevention equipment.

Industry's commitment to maintaining high training standards for rig personnel in well control and crew training will help reduce the number of well control occurrences and will continue to be a high-priority inspection area for ERCB inspection staff in 2010.

Drilling Blowouts/Kicks

In 2009, four blowouts occurred during drilling operations, a decrease from nine in 2008 (see Figure 10). This equates to 0.56 blowouts per 1000 wells drilled. Two of the blowouts resulted in freshwater flows, and two resulted in produced water/polymer flows to surface. The root cause of these blowouts can be attributed to inadequate well design due to insufficient mud density.

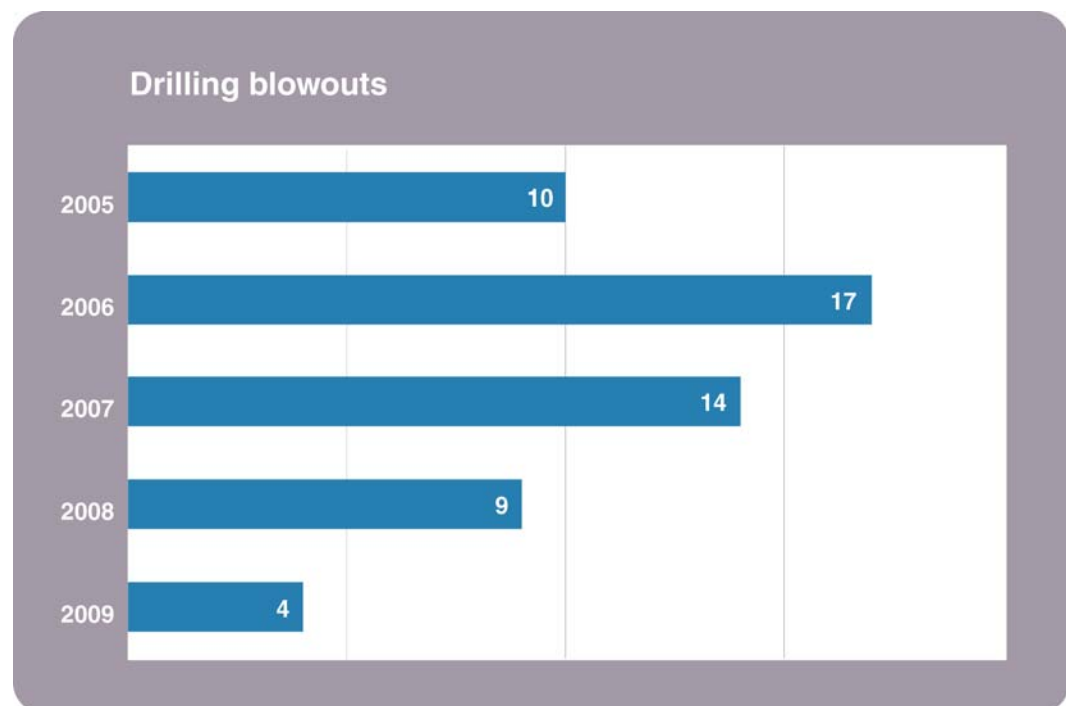


Figure 10

All blowouts were of relatively short duration (one to three days). There was no significant impact on the public and minimal impact on the environment as a result of these occurrences.

In addition to the four drilling blowouts, there were 29 reported kicks in 2009, which equates to a kick occurrence rate of about 4 kicks per 1000 wells drilled. This rate is less than the average kick rate of 4.7 kicks per 1000 wells drilled recorded over the last five years (see Figure 11).

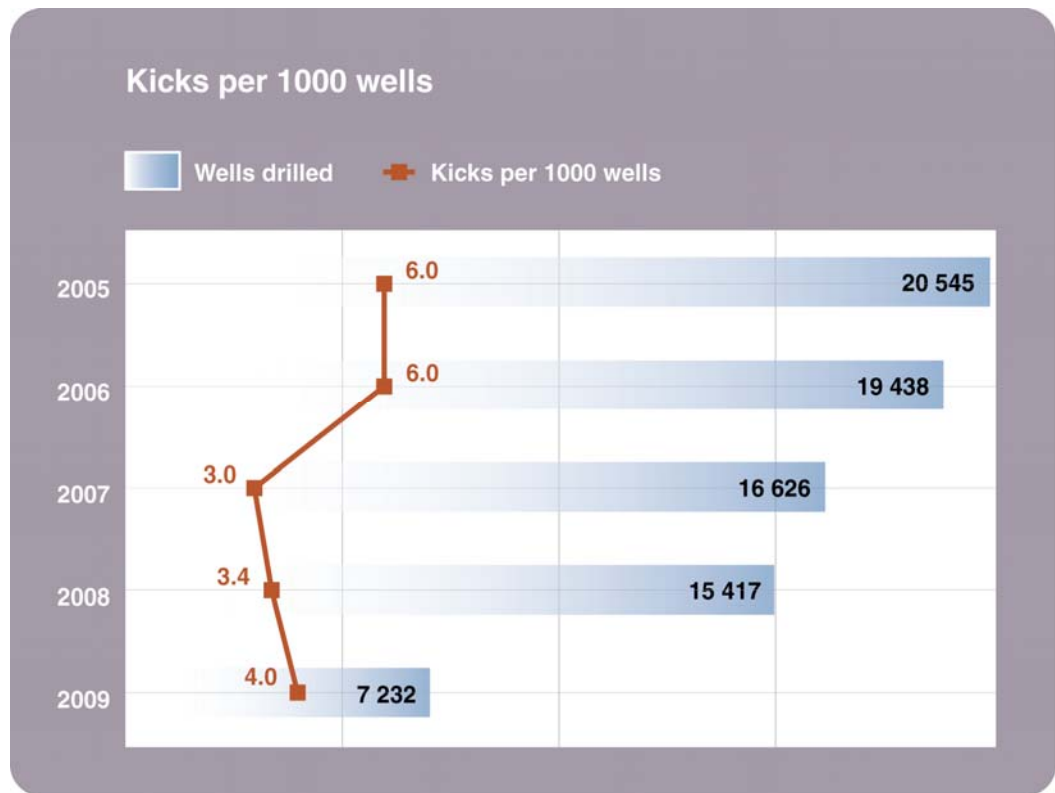


Figure 11

Servicing Blowouts

In 2009, there were five blowouts during well servicing operations (see Figure 12). All of the blowouts were sweet gas releases. Three of these blowouts were attributed to operator error and two blowouts to equipment failure. All well servicing blowouts were of short duration (about one to four days) and had minimal public and/or environmental impact.



Figure 12

Other Blowouts

This category includes blowouts that occur at a well that may be producing, not producing, standing, suspended, or abandoned. These blowouts are the result of wellhead equipment failures, operator error, third-party damage (wellhead strikes, vandalism, etc.), or inadequate well design. They are not related to drilling or servicing operations.

Historically this category accumulates the greatest number of well blowouts. In 2009, of the 14 blowouts that occurred, 12 were sweet releases and 2 were sour (see Figure 13). One of the sour releases contained less than 0.03 per cent hydrogen sulphide (H₂S) (heavy oil).

Seven of the 14 blowouts can be attributed to third-party damage, with some type of vehicle (personal, service, construction, farm, etc.) striking the wellhead.

The majority of the blowouts were of short duration and public and environmental impacts were minimal.

The ERCB investigates all blowouts to identify when changes are needed to equipment, procedures, or regulations to continually improve industry standards and reduce these occurrences.

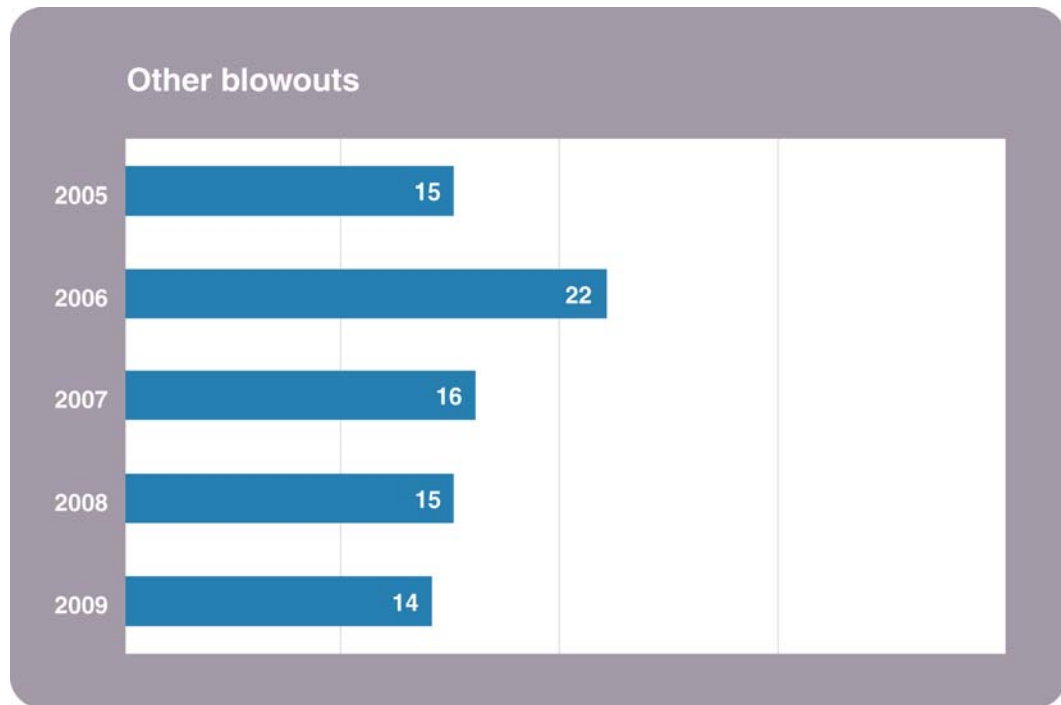


Figure 13

Casing Failures

A casing leak or failure is any loss of casing integrity, including casing damage, that may result in formation fluid from the producing zone flowing into the formation over which the casing leak or failure exists. This cross flow of fluids can typically be controlled by increasing the density of the wellbore fluids.

Ten casing failures occurred at the enhanced heavy oil recovery operations in northeast Alberta, resulting in cross flow from the producing zone into another formation. There were no public impacts and negligible environmental impacts as a result of these failures. In 2010, the FSOB will continue to address casing failures.

5.2 Primary Causes of Spills

The ERCB is responsible for ensuring minimal impact on the public and conservation of the environment when energy development occurs. Inspections are conducted on drilling waste disposal operations, waste management facilities, drilling and servicing rigs, pipelines, and production facilities and investigations are performed on incidents related to spills and releases. Inspectors also respond to public complaints and work with industry and other government agencies to minimize environmental impacts.

Equipment failure and pipeline corrosion were the leading causes of liquid spills in 2009. This is consistent with previous years. Figure 14 shows the most significant sources and causes of spills.

In 2009, the spill volumes of produced water and liquid hydrocarbon were 23 299 cubic metres (m³) and 6809 m³ respectively (see Figure 15). The areas affected and environmental impacts were kept to a minimum.

In 2010, inspectors will continue to work with industry to improve operating practices. This will include a review of corrosion mitigation programs, equipment, and staff training.

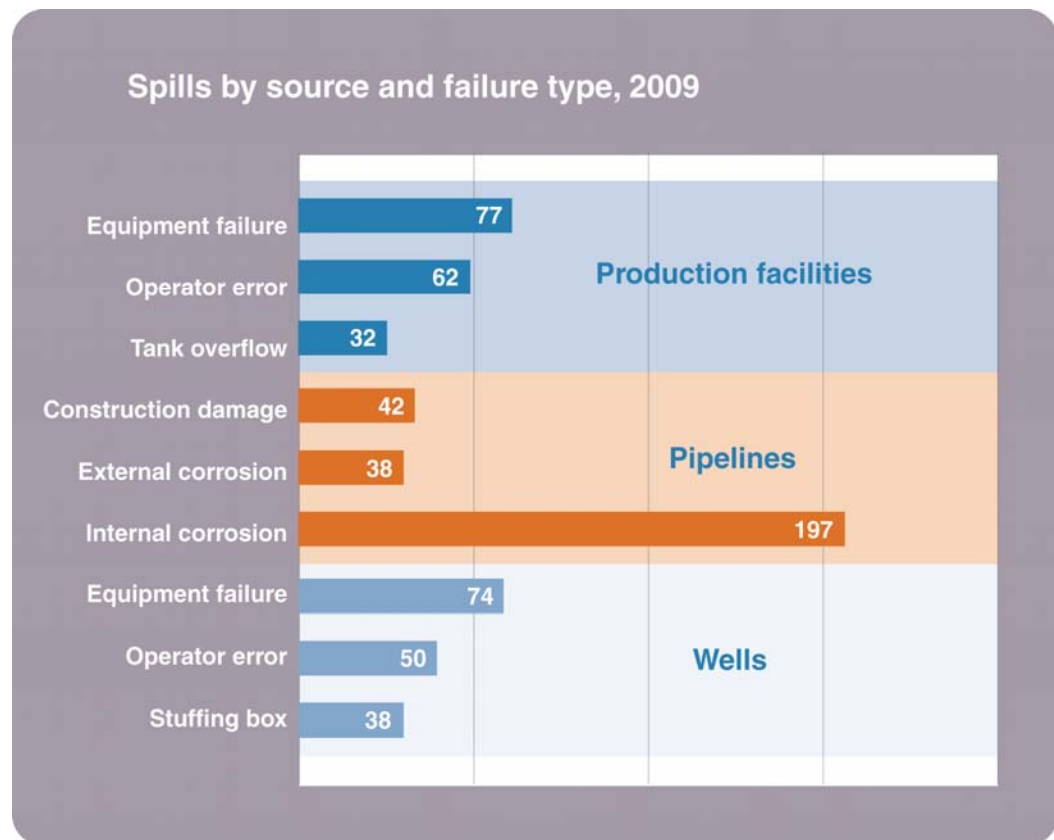


Figure 14

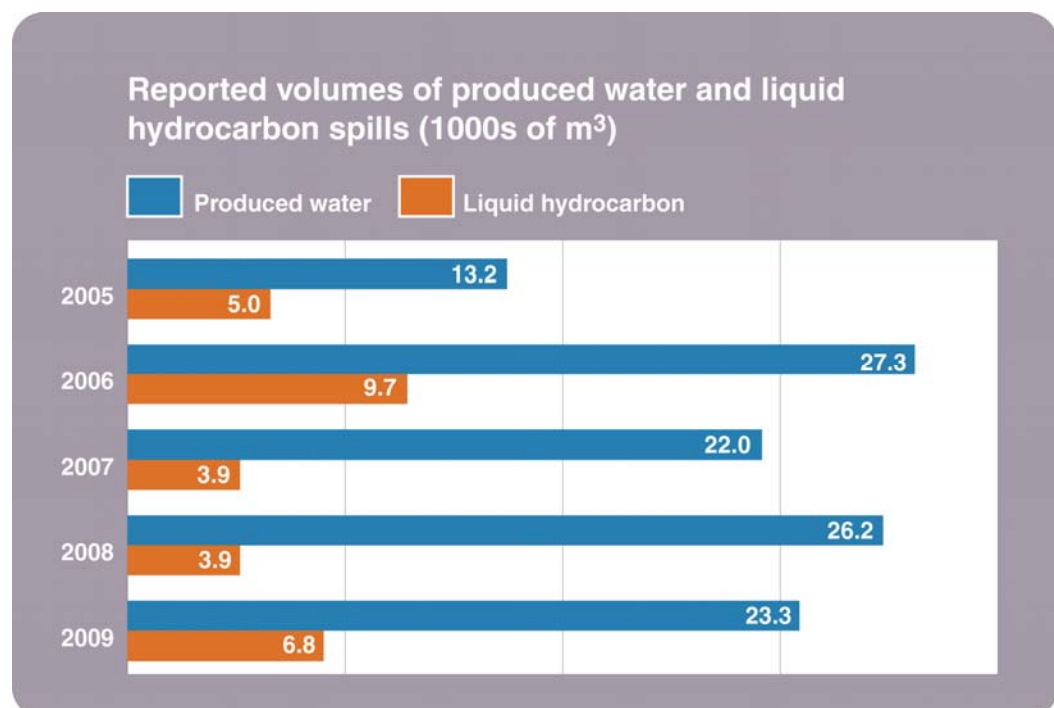


Figure 15

5.3 Industry Pipeline Trends

5.3.1 Changes in Pipeline Jurisdiction

In 2009, there was a change in pipeline jurisdiction resulting from the NEB's decision declaring the Nova Gas Transmission Ltd./TransCanada Pipelines (NGTL/TCPL) Alberta pipelines to be federally regulated. The NGTL/TCPL Alberta pipelines had been regulated by the Alberta Utilities Commission, but the ERCB maintained the historical pipeline records and provided field inspections up to 2009. Pipeline Operations staff identified the impacts of the NEB decision and provided support for the coordinated transition of jurisdiction. The reduction in pipelines under ERCB jurisdiction is evident in Table 2.

Table 2. Length of pipelines by type in Alberta under ERCB jurisdiction (km)¹

Year	Crude oil	Natural gas	Sour gas	Water	Multiphase	Others	Total
Total prior to 2002	16 171	186 280	17 106	19 117	45 684	25 114	309 472
2002	300	8 064	540	380	962	553	10 799
2003	273	11 715	695	546	1 112	706	15 047
2004	402	13 010	873	845	2 017	882	18 029
2005	116	14 255	880	320	1 221	1 901	18 693
2006	880	15 314	922	545	1 304	1 227	20 192
2007	426	8 075	512	302	1 350	647	11 312
2008	(247) ²	6 560	343	491	1 157	707	9 011
2009	671	(21 613)	206	258	566	(35)	(19 947)
Total	18 992	241 660	22 077	22 804	55 373	31 702	392 608

¹ Numbers were calculated by adding all statuses (operating, permitted, abandoned, discontinued, and suspended) for all types of pipelines as of December 31 of each year.

² The decrease in the length of crude oil pipelines may be because these lines were never constructed or were being correctly relicensed as multiphase pipelines.

5.3.2 Pipeline Failures

Figure 16 shows historical pipeline failures by product being transported. The top three product lines that have been failing are multiphase, natural gas, and water.



Figure 16

In 2009, the majority of pipeline failures continued to occur in smaller diameter gathering lines, primarily the 60.3 millimetre (mm), 88.9 mm, 114.3 mm, and 168.3 mm systems.

Figure 17 shows that the pipeline failure ratio was 1.7/1000 km of pipe for 2009, with the mean average pipeline failure ratio since 2004 at 2.1/1000 km. The failure ratio by substance per 1000 km for 2009 was 1/1000 km for crude oil, 0.87/1000 km for natural gas, 0.95/1000 km for sour gas, 6/1000 km for water, 5/1000 km for multiphase, and 0.25/1000 km for other.

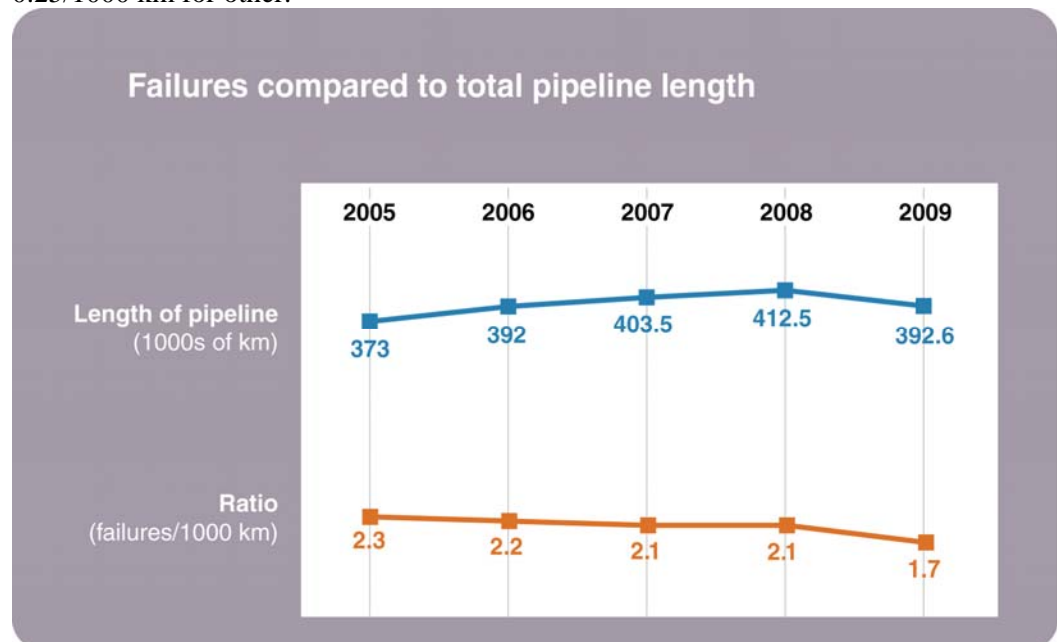


Figure 17

6 2009 Compliance Results

This section describes the compliance rate determined by audits and inspections conducted by the FSOB, as well as the most common reasons for noncompliances.

Inspections and audits are prioritized based on the weighting of three key criteria—operator (licensee/contractor) history, site sensitivity, and inherent risk (OSI)—with respect to the facility or operation. Field staff focus on licensees with previous low or high risk noncompliances, including those with a persistent noncompliance history. Sensitivity is determined by whether the facility is in a forested or agricultural area, with an increased inspection emphasis on areas with high numbers of public complaints and a high frequency of environmental incidents. The inherent risk of a facility or operation is determined by reviewing specific technical details about the facility, such as the complexity of the operation and whether the facility is sweet or sour.

The ERCB will continue to encourage licensees to proactively identify issues and ensure compliance. FSOB staff ensure that compliance is met through surveillance activities, such as inspections and investigations. Staff refer to the ERCB enforcement process detailed in *Directive 019*, which came into effect on January 1, 2006. This is a risk-based two-tier process that places increased emphasis on prevention, while retaining manual escalation of enforcement measures when required.

Directive 019 was created to improve process clarity, focus, and efficiency and is built on the principles that

- public safety and environmental protection will not be compromised;
- enforcement will be timely, effective, and appropriate; and
- licensees are responsible to comply with ERCB requirements and processes.

Directive 019 clearly explains what licensees must do when a noncompliance is identified, the enforcement process and consequences for any noncompliance, the appeal process, the voluntary self-disclosure policy, and the availability of compliance information. Additional information regarding *Directive 019* is on the ERCB Web site www.ercb.ca.

In this report, the terms “in compliance,” “low risk,” and “high risk” are used. It is important that the definition of each is understood to properly interpret the statistics. There are numerous requirements examined during each inspection, and even if only one noncompliance item is identified, the resulting inspection finding is considered noncompliant. The following definitions for low and high risk noncompliance apply throughout this report:

- **Compliance**—The act of complying with direction, rules, and requirements as administered by the ERCB.
- **Low risk noncompliance**—Using the Compliance Assurance Risk Assessment Matrix, the assessment of the qualitative measures of consequences is minimal. A contravention of regulation(s)/requirement(s) is found that does not result in a direct threat to the public and/or the environment and does not adversely affect oil and gas operations. Examples of low risk noncompliance are facility signage missing and garbage and debris not stored in a reasonable manner at an oil or gas facility.
- **High risk noncompliance**—Using the Compliance Assurance Risk Assessment Matrix, the assessment of the qualitative measures of consequences is more significant. A contravention of regulation(s)/requirement(s) is found that the licensee

has failed to address and/or that has the potential to cause a significant impact on the public and/or the environment. Examples of high risk noncompliances are H₂S release causing odours off lease at an oil battery and required blowout preventer (BOP) drills not conducted.

The ERCB continues to classify all of its requirements as low or high risk and document them under the appropriate compliance category. For an overview of current ERCB categories, contact personnel, and an overview of risk-assessed noncompliances, go to the ERCB Web site www.ercb.ca under Industry Zone : Compliance and Enforcement : Risk Assessed Noncompliance.

The ultimate goal of ERCB enforcement is to ensure compliance with the requirements that are written, monitored, and enforced on behalf of Albertans, our stakeholders.

Compliance ensures that resource activity within the province is conducted in a manner that protects public safety, minimizes environmental impact, preserves equity, and ensures effective conservation of resources.

6.1 Compliance Summary

The compliance rate is the key indicator of industry's response to ERCB requirements. If an audit or inspection finds one or more high risk noncompliances, it is reported as a high risk noncompliance. Furthermore, if an audit or inspection finds only low risk noncompliance, it is classified as a low risk noncompliance.

Table 3 summarizes the 2009 compliance results from inspections, investigations, and audits for the FSOB.

Table 4 summarizes the types of facilities and operations that were requested to be shut down or suspended due to issues of high risk noncompliance.

6.2 Drilling Operations Inspection Results

In 2009, of the 409 inspections made on drilling operations, 347 operations were in compliance with ERCB requirements (85 per cent) and 62 were not (15 per cent) (see Figure 18). All noncompliance items were brought into compliance. This compares to 357 inspections conducted in 2008, of which 296 operations were in compliance and 61 were not.

Of the 409 inspections conducted in 2009, 17 were on critical sour well drilling operations. (The ERCB inspects all critical sour wells located near people at least once during or immediately prior to drilling into the critical zone.) These inspections found 16 operations in compliance with ERCB requirements and one in high risk noncompliance. This compares to 2008, when 28 critical sour well drilling operation inspections were completed, resulting in 24 operations found in compliance and 4 in noncompliance.

Of the 62 drilling operations in noncompliance in 2009, 34 were low risk noncompliances and 28 high risk noncompliances (see Figure 19). This compares to 2008, when 61 operations were in noncompliance; 36 had low risk noncompliances and 25 had high risk noncompliances.

Table 3. FSOB compliance summary, 2009

	Compliance category	Initial audits/ inspections	In compliance	Low risk noncompliance	High risk noncompliance	Compliance rate (in compliance with high risk requirements) (%)
Field Operations Group	Drilling operations	409	347	34	28	93
	Drilling waste	181	153	11	14	92
	Well servicing	350	319	26	5	99
	Well site inspections	10 006	8 203	1 748	55	99.5
	Gas facilities	3 720	2 739	926	55	98.5
	Oil facilities	4 695	3 685	925	68	98.5
	Waste facilities	91	63	22	6	93
	Pipelines	734	647	36	51	93
	Air monitoring	990	986	0	4	99.6
Production Operations Section	<i>Directive 060</i> economic evaluation	56	51	0	5	91
	<i>Directive 060</i> GOR ¹ greater than 3000 m ³ /m ³	119	102	0	17	86
	Production measurement and reporting	43	10	13	20	53
	Sulphur recovery guidelines	332	323	2	8	98
	Glycol dehydrator benzene	2 403	2 336	59	8	99.7
	Packer testing audits	1	1	0	1	n/a
Well Operations Section	Surface casing vent flow/gas migration audits	5	5	0	0	100
	Well abandonment audits	22	0	0	0	100
	Well casing failure audits	37	11	22	4	89
	Noncompliance with Liability Management Rating (LMR) requirements	302	262	59 ²	n/a	80 ²
Liability Management Section	Orphan Levy	877	778	99 ²	n/a	89 ²
Total		25 373	21 021	3 982	349	98.6 ³

¹ Gas-oil ratio.² This noncompliance category has only low risk noncompliances; therefore, these were used to calculate the overall compliance rate.³ Emergency management, in situ oil sands, and oil sands mining noncompliances are recorded in one or more of the compliance categories listed above and are not distinguished separately in this report.

Table 4. Facilities and operations shut down by FSOB request, 2009

Type	Number of suspensions	Average duration of inactivity	Most common reasons for suspensions
Drilling rigs	28	5.14 hours	<ul style="list-style-type: none"> • Bleed-off systems • BOP control • Pressure testing
Service rigs	5	5.4 hours	<ul style="list-style-type: none"> • Compliance with other ERCB requirements • BOP systems
Gas facilities	12	11.3 days	<ul style="list-style-type: none"> • H₂S emissions off lease • Underground tanks not integrity tested every 3 years • Flame-type equipment without workable flame arrester less than 25 m from a process flaring
Oil production facilities	27	15 days	<ul style="list-style-type: none"> • Flame-type equipment without workable flame arrester less than 25 m from a process flaring • Escalation to low risk enforcement • Underground storage tank not integrity tested
Pipelines	45	29.5 days	<ul style="list-style-type: none"> • Ground disturbance activities • Corrosion integrity work
Well sites	10	30.1 days	<ul style="list-style-type: none"> • Inadequate fencing • Inadequate lease diking • Licensee 24-hour emergency phone number did not initiate immediate action
Total	127	96.44 days	

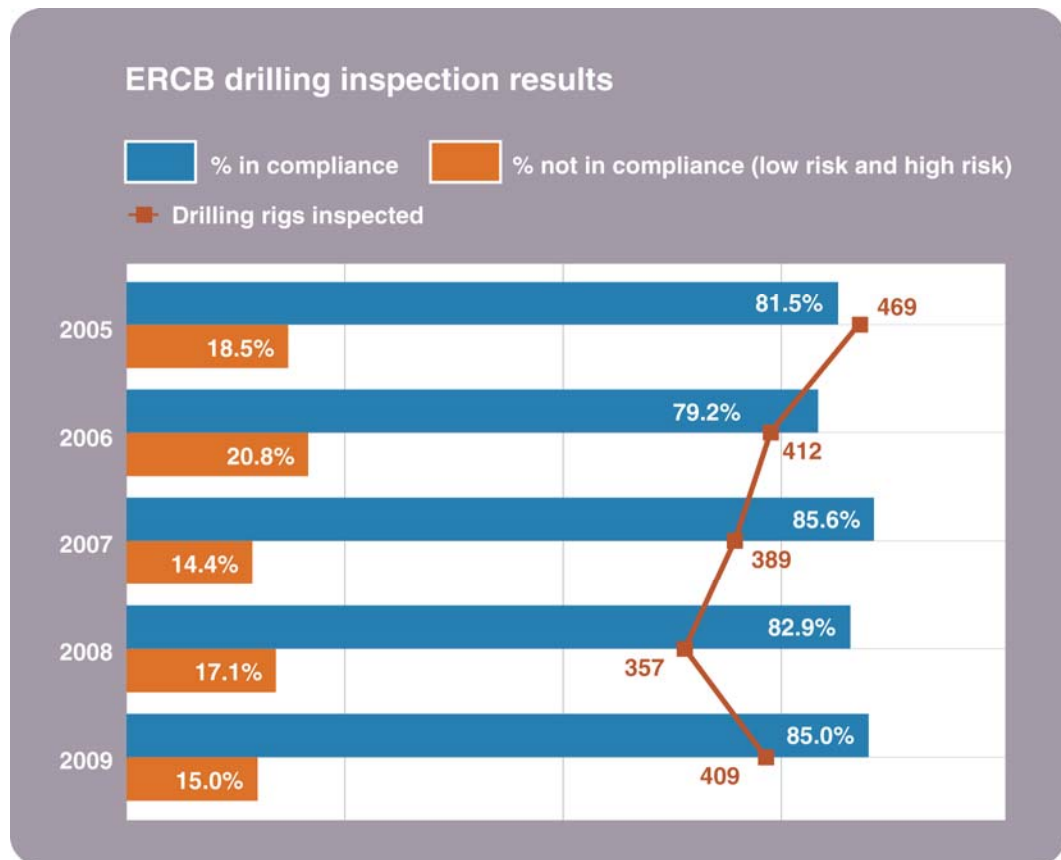


Figure 18

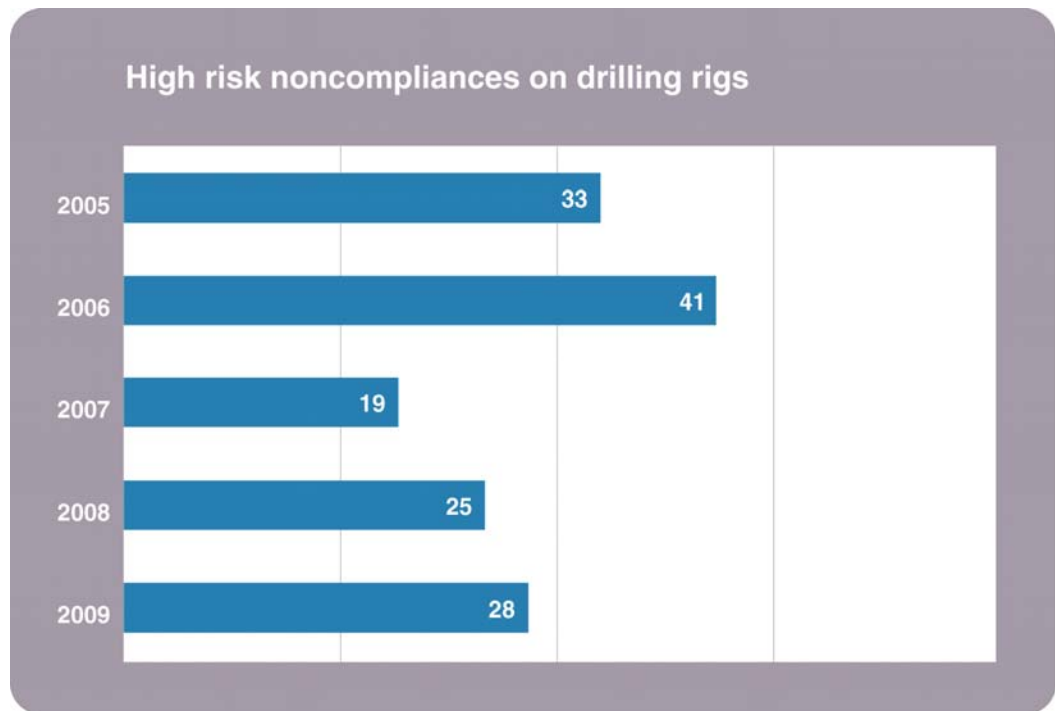


Figure 19

Drilling operations were suspended at all rigs with high risk noncompliances until they were corrected. The total shutdown time was about 145 hours. This compares to 77 hours of drilling rig shutdowns in 2008.

The most common high risk noncompliances were related to bleed-off systems, BOP control systems, and pressure testing (see Figure 20).

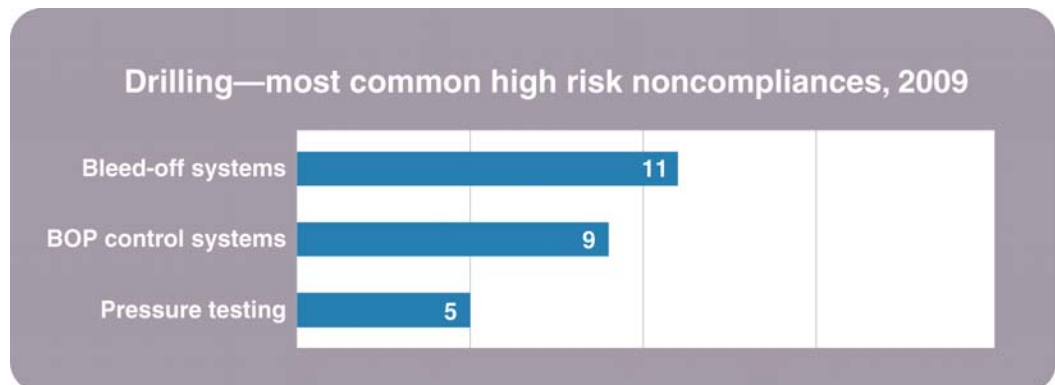


Figure 20

In 2010, the ERCB will continue to focus on conducting drilling operator awareness sessions to increase industry's understanding of requirements and improve compliance levels.

6.3 Well Servicing Inspection Results

Well servicing operations witnessed a decrease in activity in 2009 compared to 2008. This was partly due to the significant reduction in the number of wells drilled in the province.

In 2009, ERCB staff conducted 350 inspections on well servicing operations, of which 319 were in compliance (91.1 per cent) and 31 (8.9 per cent) were not (see Figure 21). Of the 31 noncompliances, 26 were low risk and 5 high risk. This compares to 2008, when 24 operations were not in compliance; 19 had low risk noncompliances and 5 had high risk noncompliances. All noncompliances in 2009 were brought into compliance.

Well servicing operations were suspended at all service rigs with high risk noncompliances until the noncompliances were corrected. In 2009, the total shutdown time was nearly 27 hours, compared to 3 hours in 2008.

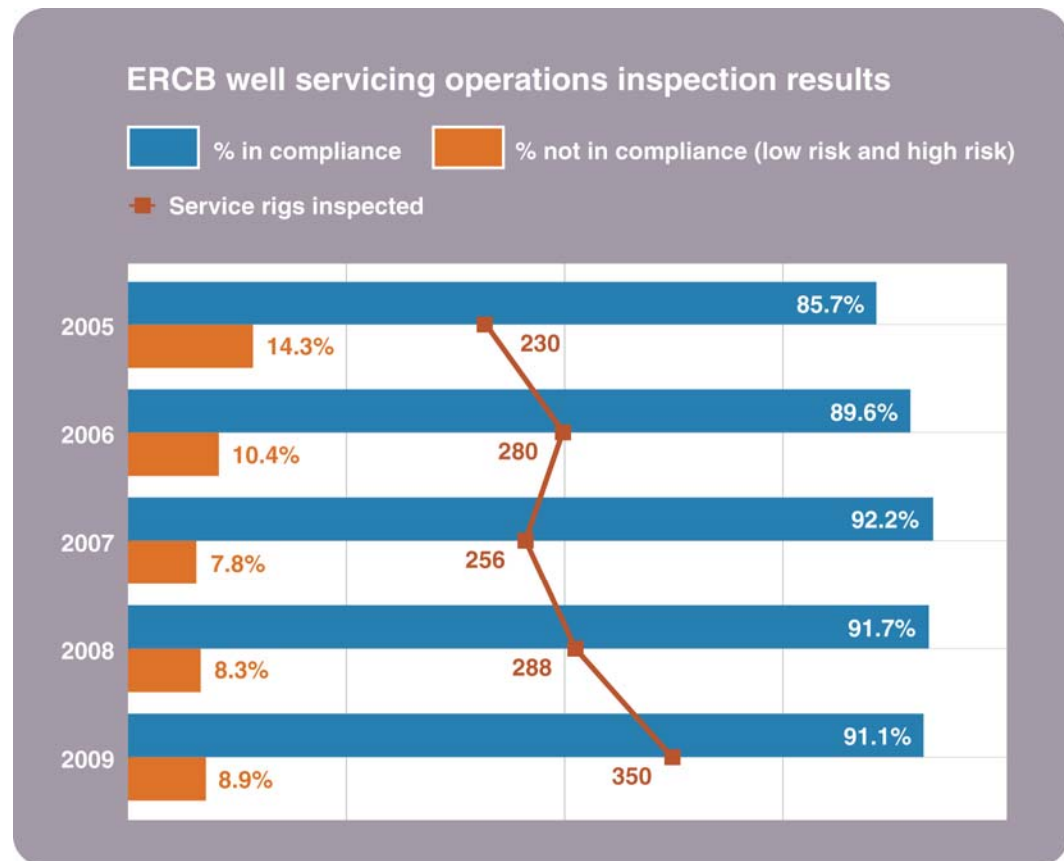


Figure 21

Figure 22 summarizes the most common well servicing high risk noncompliances addressed in 2009.



Figure 22

In 2010, the ERCB will focus on conducting servicing operator awareness sessions to increase industry's understanding of requirements and improve compliance levels for well servicing. Both *Directive 036: Drilling Blowout Prevention Requirements and Procedures* and *Directive 037: Service Rig Inspection Manual* will be reviewed to ensure that they reflect current practices and technological improvements.

6.4 Well Site Inspection Results

Well site inspections are conducted in conjunction with facility inspections.

There was an increase in total licensed wells from 2008. As of the end of 2009, the following inventory was recorded:

• oil well	51 621
• gas well	118 656
• coalbed methane gas well	12 674
• shale gas well	95
• coalbed methane and shale gas well	13
• service well	12 319
• suspended well	50 769
• other well	2
• drilling well	7
• abandoned well	147 203

In 2009, 10 006 well site inspections and investigations were conducted. Of these, 9278 were routine surveillance inspections, 246 were investigations, 203 were connected to a single-well gas battery, 188 were witnessing operations (no inspection), 48 were air monitoring inspections, and 43 were compliance verification inspections. In 2009, the ERCB recorded 211 high risk noncompliance well site self-disclosures.

Of the 10 006 well sites inspected or investigated, 82 per cent (8203 well sites) were found to be in compliance, while 17.5 per cent had low risk noncompliances (1748 well sites). The most common low risk occurrences were related to housekeeping, identification signs, and surface casing venting.

High risk noncompliances were found in 0.5 per cent of the well sites (55 well sites). Figure 23 shows the most common high risk noncompliances in 2009.

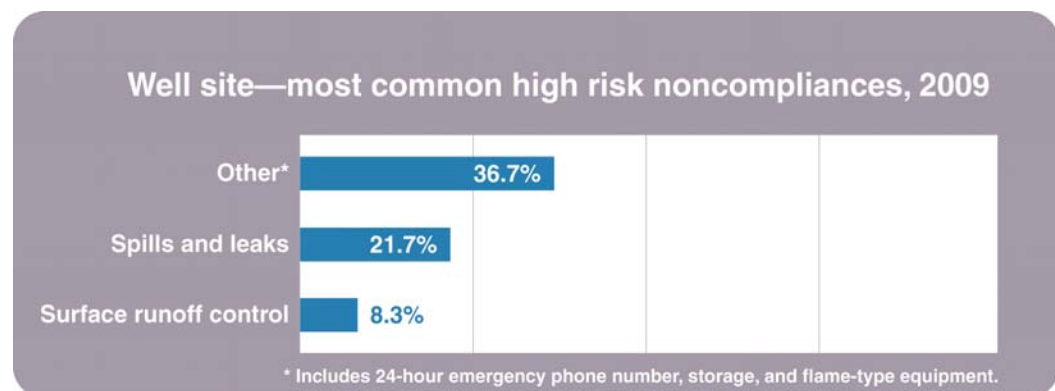


Figure 23

6.4.1 Well Site Abandonment Inspection Results

In 2009, staff conducted 57 inspections and investigations on cased and open-hole abandonments to ensure industry compliance with *Directive 020: Well Abandonment*. Of these, 96 per cent (55 well abandonments) were found to be in compliance with ERCB regulations. Low risk noncompliances were identified in 2 per cent (one well abandonment) and high risk noncompliances in 2 per cent (one well abandonment).

6.4.2 Well Site—Licensees with Persistent Low Risk Noncompliances

The ERCB identified three licensees as low risk persistent noncompliant in the well site inspection category. Noncompliances were identified in more than 50 per cent of the total well site inspections. Each licensee was requested to review its operating practices and develop an action plan for remediation.

In 2010, a review of inspections conducted on these licensees will be initiated to ensure that their compliance rates have improved. Senior ERCB personnel will continue to intervene and meet with these licensees to identify the root causes of their noncompliance and ensure that an approved action plan is implemented to improve their compliance.

6.4.3 Well Operations Auditing Results

Table 5 summarizes the auditing activity in the well operations compliance categories. Limited compliance auditing was conducted in 2009 as staff focused on regulatory development and day-to-day operations. All noncompliances were corrected by licensees.

Table 5. Well Operations auditing activities and compliance results, 2009

	Packer testing	Well casing failure	Well abandonment	Surface casing vent flow/gas migration
Number of audits	1	37	22	5
Noncompliance with low risk requirements	0	22	0	0
Noncompliance with high risk requirements	1	4	0	0
Compliance rate with high risk requirements	0%	89%	100%	100%

6.5 Gas Facilities Inspection Results

In 2009, staff held 20 awareness sessions for gas facility licensees throughout the province. The objective was to reduce industry impact on the public and environment by informing industry about ERCB requirements and encouraging the use of best operating practices.

Inspection staff participated in field training sessions with ERCB technical specialists in gas, oil, and the environment. These sessions were held at production facilities and provided opportunities to increase awareness and encourage provincial regulatory consistency.

The inventory of licensed gas facilities continued to increase from previous years. At the end of 2009, totals were

- sweet gas single battery 7340
- sour gas single battery 2732
- sweet gas proration effluent battery 4388
- sour gas proration effluent battery 792
- sweet gas test battery 4

• sweet gas plant	532
• sour gas plant acid gas flaring/injection	195
• sour gas plant, fractionation	3
• sweet gas plant, fractionation	5
• gas plant, sulphur recovery	43
• sweet gas plant, straddle	8
• sour gas plant, straddle	1
• sweet compressor stations	3609
• sour compressor stations	911

There was an increase in inspections and investigations in 2009, with 3720 gas facility inspections and investigations conducted. This represents an increase of 46 per cent compared to 2008, when 2023 inspections and investigations were conducted.

Of the 3720 facilities inspected, 73.6 per cent (2739 facilities) were found to be in compliance. Low risk noncompliances were identified in 24.9 per cent (926 facilities) and high risk noncompliances in 1.5 per cent (55 facilities).

The most common low risk noncompliances were gas measurement, housekeeping, and noncompliance with other ERCB requirements.

The number of high risk noncompliances had been gradually rising since 2005, but in 2009 there was a reduction in this category, partly due to licensees voluntarily self-disclosing gas facility noncompliances (see Figure 24).

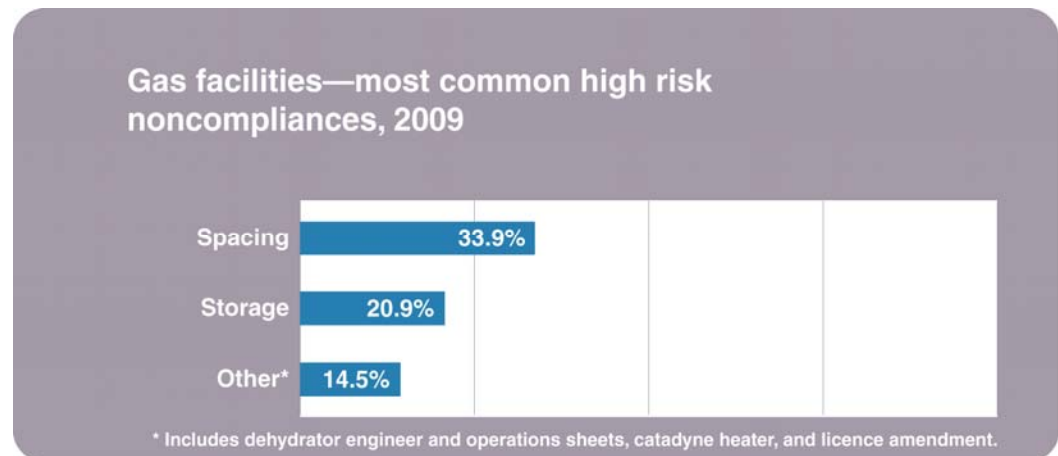


Figure 24

6.5.1 Gas Facilities—Licensees with Persistent Low Risk Noncompliances

In 2009, the ERCB identified two licensees with persistent low risk noncompliances. Issues were found in more than 50 per cent of the total inspections of their facilities. Each licensee was requested to review its operating practices and develop an action plan for remediation.

A review of inspections conducted on these licensees will be initiated in 2010 to ensure that their compliance rates have improved. If they have not improved, further corrective actions will be taken.

Senior ERCB personnel will continue to intervene and meet with licensees that have been identified as persistently noncompliant to identify the root causes and ensure that an approved action plan is implemented to improve compliance.

6.6 Oil Facilities Inspection Results

There was an increase in the total oil facility inventory from 2008. At the end of 2009, the following was recorded:

• sweet multiwell batteries	2 850
• sour multiwell batteries	1 086
• sweet single-well batteries	12 353
• sour single-well batteries	1 771
• sweet satellites	2 363
• sour satellites	2 527
• sweet injection/disposal facilities	827
• sour injection/disposal facilities	86
• sweet custom treating facilities	30
• sour custom treating facilities	3

The total inventory of oil facilities, the number of inspections, and the percentage of inspections that found facilities in compliance are shown in Figure 25.

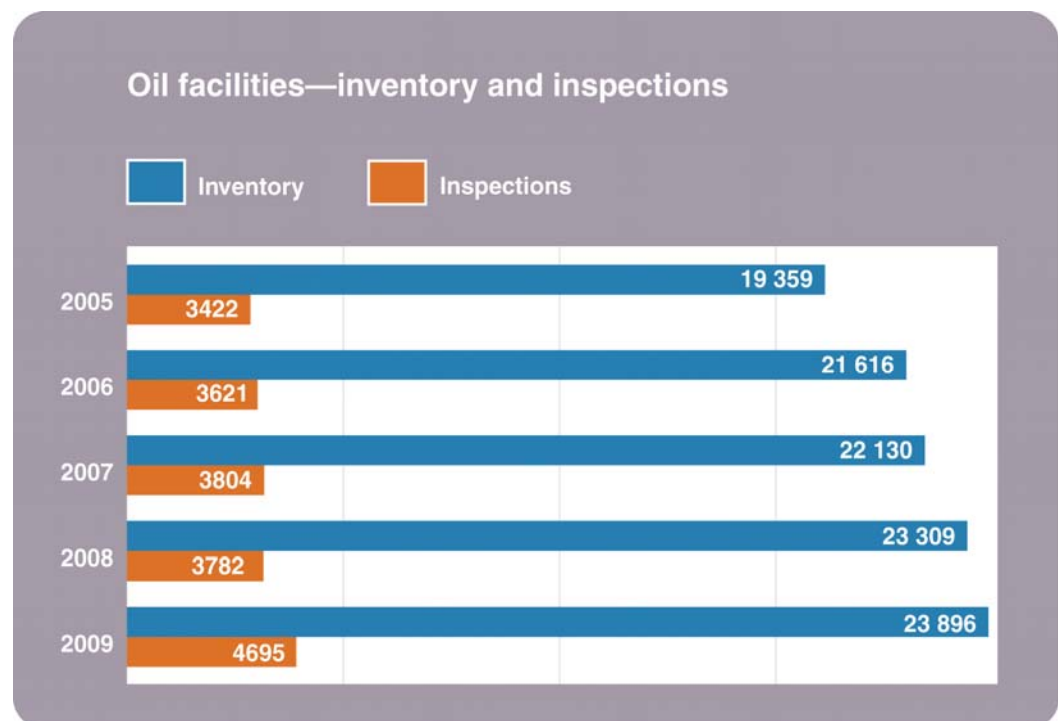


Figure 25

Of the 4695 inspections conducted in 2009, 78.3 per cent of the facilities were found to be in compliance. Of the 21.7 per cent of facilities found not in compliance, 20.3 per cent (952 facilities) were low risk noncompliant and 1.4 per cent (68 facilities) were high risk noncompliant. In 2008, 3782 inspections were conducted, with 24.0 per cent (907 facilities) low risk noncompliant and 1.7 per cent (66 facilities) high risk noncompliant (see Figure 26).

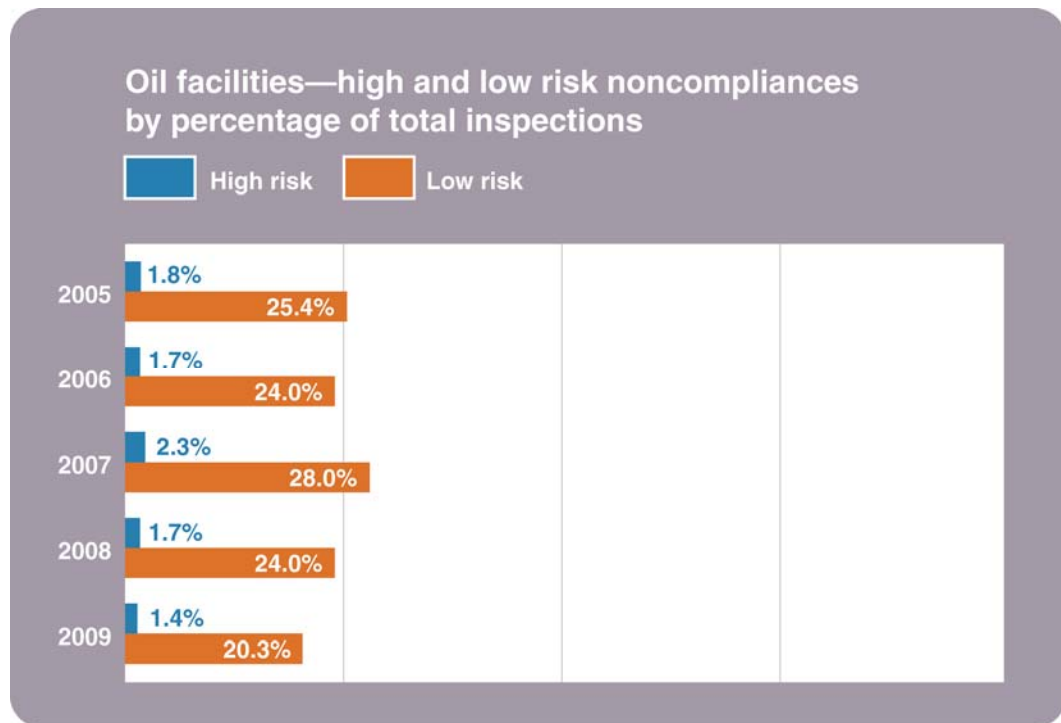


Figure 26

Among the 68 facilities in high risk noncompliance in 2009, 27 oil production facilities were suspended or partially suspended. Appropriate enforcement action was taken on all facilities to bring them into compliance.

The most common high risk noncompliances were spacing (30 per cent), spills (18 per cent), and storage (15 per cent). The most common low risk noncompliances were housekeeping (33 per cent), measurement (19 per cent), and storage (16 per cent). All noncompliances were dealt with in accordance with *Directive 019*.

6.6.1 Oil Facilities—Licensees with Persistent Low Risk Noncompliances

In 2008, two licensees had persistent low risk noncompliances in more than 60 per cent of the inspections done at their oil facilities. In 2009, these licensees were requested to review their operating practices and develop an action plan to address the high rate of low risk noncompliances.

These licensees made significant improvements in their compliance with ERCB requirements and will be removed from the ERCB persistent noncompliance status category in the near future if evidence of improvement continues.

There were no persistent noncompliance assessments in 2009. In 2010, the ERCB will continue to monitor licensees for high rates of noncompliance related to oil facility inspections.

6.7 Waste Facilities Inspection Results

As of the end of 2009, there were 102 operating oilfield waste management facilities approved by the ERCB. They include

- waste storage and processing facilities,
- waste transfer stations,

- surface facilities associated with waste disposal wells,
- waste disposal wells (classes 1a and 1b),
- caverns,
- landfills,
- biodegradation facilities, and
- thermal treatment facilities.

In 2009, inspectors conducted 91 waste management inspections, including one mobile air monitoring inspection. The inspections found 63 waste management facilities in compliance with ERCB regulations, 22 were low risk noncompliant, and 6 were high risk noncompliant (see Figure 27).

The most common low risk noncompliances included staining/spillage, hydrocarbon odours, and expired meter calibrations. The most common high risk noncompliances included no secondary containment around tanks, inadequate flame arresters, and accepting waste not authorized in the approval. All facilities were brought into compliance.



Figure 27

In 2010, the ERCB will continue to focus on waste management inspections, as well as educating industry about the requirements.

6.7.1 Drilling Waste Management Inspection Results

Drilling waste disposal methods are categorized in *Directive 050: Drilling Waste Management* as routine or nonroutine. Routine methods are any disposal that does not

require preapproval (e.g., mix-bury-cover, landspray, landspray while drilling, and pump-off). Nonroutine methods are any disposal that requires preapproval (e.g., land treatment, biodegradation treatments, and alternative disposals).

In 2009, 180 routine drilling waste inspections and 1 nonroutine drilling waste inspection were conducted. Of those inspections, 158 facilities were compliant, 11 were low risk noncompliant, and 14 were high risk noncompliant.

The most common low risk noncompliances were housekeeping/fencing for remote sumps, signage requirements, and notification requirements.

The most common high risk noncompliances were landspraying closer than allowable limits to surface water, sump closure not completed within 12 months of rig release, and sump not properly constructed.

In 2008, 132 drilling waste inspections were conducted; 117 facilities were compliant, 7 were low risk noncompliant, and 8 were high risk noncompliant.

6.8 Production Measurement Compliance Results

The Production Audit Team (PAT) verifies industry's compliance with ERCB production measurement and reporting requirements in *Directive 017: Measurement Requirements for Upstream Oil and Gas Operations*, *Directive 007: Volumetric and Infrastructure Requirements*, and *Directive 076: Operator Declaration Regarding Measurement and Reporting Requirements*. Production audits are conducted in accordance with *Directive 046: Production Audit Handbook*. Audits are selected using a risk-based audit protocol or as requested by stakeholders.

In 2009, there were 43 production measurement and reporting audits, 13 finding low risk noncompliances and 20 resulting in high risk enforcements. These results are summarized in Table 6.

Table 6. Production measurement and reporting audits and compliance results, 2005-2009

	2005	2006	2007	2008	2009
Number of audits	85	16	16	33	43
Noncompliance with low risk requirements	79	0	3	8	13
Noncompliance with high risk requirements	24	16	13	17	20
Compliance rate with high risk requirements	98%	0%	19%	48%	53%

6.8.1 Directive 060 GOR Greater Than 3000 m³/m³ Audits

The FSOB runs a surveillance program that examines GORs from oil wells across the province. Any oil well with a GOR greater than 3000 m³/m³ at any point over the life of the well is subject to high risk enforcement and is required to be shut in until the gas can be conserved.

In 2009, a total of 119 GOR audits were conducted in accordance with *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting*. Seventeen wells were required to be shut in until conservation was implemented, and 17 licensees had high risk enforcement actions conducted against them (see Table 7).

Table 7. *Directive 060* GOR greater than 3000 m³/m³ and compliance results, 2006-2009

	2006	2007	2008	2009
Number of audits	17	120	150	119
Noncompliance with low risk requirements	0	0	0	0
Noncompliance with high risk requirements	0	0	1	17
Compliance rate with high risk requirements	100%	100%	99%	86%

There was a slight improvement in solution gas conservation from conventional wells across the province in 2009. Solution gas conservation increased to 97.3 per cent in 2009 from 97.0 per cent in 2008. Similarly, solution gas conservation for bitumen wells increased in 2009 to 83.3 per cent from 83.0 per cent in 2008.

6.8.2 Flaring and Venting Results

The Flaring and Venting Team develops and enforces the economic evaluation requirements of *Directive 060*. The team monitors facilities reporting excess flaring volumes, follows up to ensure that compliance is achieved, verifies the economic viability of solution gas conservation, processes royalty waiver application referrals, and processes well test permit applications for well test flaring and venting.

In 2009, a total of 56 *Directive 060* economic evaluation audits were conducted. Table 8 details the results. The most common high risk noncompliance was the failure to implement economic decision tree conservation project and performance requirements.

Table 8. *Directive 060* economic evaluation audits and compliance results, 2005-2009

	2005	2006	2007	2008	2009
Number of audits	171	17	20	59	56
Noncompliance with low risk requirements	0	0	0	0	0
Noncompliance with high risk requirements	2	0	2	5	5
Compliance rate with high risk requirements	99%	100%	90%	92%	91%

6.8.3 Sulphur Recovery Efficiency and Results

Sulphur recovery efficiency was monitored at 39 sulphur recovery and 42 acid gas¹ injection facilities to ensure that targets were met on a calendar quarter-year basis.

In 2009, 332 audits were conducted. Table 9 details the results.

Table 9. Sulphur recovery and compliance results, 2005-2009

	2005	2006	2007	2008	2009
Number of audits	332	332	332	332	332
Noncompliance with low risk requirements	8	2	1	1	2
Noncompliance with high risk requirements	2	7	10	13	7
Compliance rate with high risk requirements	99.2%	98%	97%	95%	98%

6.8.4 Glycol Dehydrator Annual Inventory Assessment

The Sulphur Recovery/Gas Plant Performance Team is responsible for monitoring and enforcing the benzene requirements for the annual Dehydrator Benzene Inventory List, as required by *Directive 039: Revised Program to Reduce Benzene Emissions from Glycol Dehydrators*. This program was formerly administered by the Canadian Association of

¹ Acid gas that has been injected is treated as sulphur recovered.

Petroleum Producers (CAPP) as a voluntary program; in 2007 it became regulated by the ERCB. The first annual dehydrator benzene inventory assessment was conducted in 2009 for the 2008 operating year.

In 2009, 2403 operating glycol dehydrators were reported across Alberta for such facility types as gas plants, batteries, compressor stations, and well sites. The annual Dehydrator Benzene Inventory List is assessed on an annual basis for individual dehydrators, as well as on a per-site basis, to ensure that benzene emission rates are met.

In 2009, a review of the 2403 operating dehydrators found 8 high risk noncompliances related to exceeding the annual benzene emission limit and 44 low risk noncompliances for failure to submit the required annual Dehydrator Benzene Inventory List. In addition, 15 low risk noncompliances were identified for failure to notify residents within 750 m of a dehydrator. The compliance rate with high risk requirements for benzene emissions in 2009 was 99.6 per cent.

6.9 Pipeline Inspection Results

FSOB staff focus on the following key pipeline inspection areas:

- construction and pressure testing,
- operations,
- contact damage, and
- failures.

6.9.1 Pipeline Construction and Pressure Testing Inspections

Inspectors conducted 554 pipeline construction and pressure testing inspections in 2009. The inspections found 529 operations in compliance, 20 to be low risk noncompliant, and 5 to be high risk noncompliant. This compares to 437 such test inspections in 2008, which found 390 operations in compliance, 34 to be low risk noncompliant, and 13 to be high risk noncompliant.

Inspectors will continue to conduct inspections on construction operations in 2010 with a focus on nonmetallic pipelines. Staff will educate licensees that are noncompliant, since joint failures and construction-related failures have been increasing with the use of new corrosion-resistant materials.

6.9.2 Pipeline Operations Inspections

A pipeline operations inspection involves a field inspection of the pipeline system and a review of a licensee's maintenance documentation. In 2009, staff conducted operations inspections on 82 licensees, which included the inspection of 314 licensed pipeline systems. The inspections found 158 operations in compliance, 105 to be low risk noncompliant, and 51 to be high risk noncompliant. This compares to 53 licensees with a total of 200 licensed pipeline systems inspected in 2008, of which 102 were in compliance, 45 were low risk noncompliant, and 53 were high risk noncompliant.

6.9.3 Pipeline Contact Damage

There were 66 contact damage incidents in 2009 (see Figure 28). One was low risk noncompliant and 16 were high risk noncompliant. Following a review, the ERCB concluded that the remaining 49 incidents did not warrant enforcement action. This

compares to 109 incidents in 2008, of which 3 were low risk noncompliant and 29 were high risk noncompliant.

The reduction was primarily due to a decrease in ground disturbance activity. In 2008 about 9000 km of line were permitted for construction, while in 2009 about 5000 km were permitted.



Figure 28

In 2009, field staff conducted 35 seminars on ground disturbance for industry and the public. Staff will continue to educate on and enforce compliance with ground disturbance requirements in 2010.

6.9.4 Pipeline Failures

A pipeline failure is defined as the failure of the pipeline to contain the substance being transported. For reporting purposes, pipeline hits are included in the pipeline incident numbers. Terms used are defined as follows:

- Hit—striking a buried pipeline during a ground disturbance activity resulting in the pipeline or pipeline coating being damaged; a release of product does not necessarily result.
- Leak—an opening, crack, or hole in a pipeline causing some product to be released, but not immediately impairing the operation of the pipeline.
- Rupture—the instantaneous tearing or fracturing of the pipeline material, immediately impairing the operation of the pipeline.

The ERCB's release reporting and inspection priority system applies to all pipeline releases.

If a pipeline failure occurs, the licensee or operating company is required to inform the local ERCB Field Centre. Field staff record the information in a database, including the

date of occurrence, geographic location, pipeline specifications, operating conditions, environmental release information, cause, and priority rating of the release.

In 2009, there were 27 ruptures recorded, a decrease compared to the 39 ruptures in 2008. Table 10 shows the various causes of failures and corresponding inspections and investigations during 2009.

Table 10. Failures reported from January 1 to December 31, 2009*

Cause	Incidents		Leaks		Ruptures	
	#	%	#	Inspections/ investigations	#	Inspections/ investigations
Construction damage	70	9.5	66	66	4	4
Damage by others (hits with release)	23	3.1	8	8	15	15
Damage by others (hits, no release)	43	5.9	0	43	0	0
Earth movement	5	0.7	5	5	0	0
External corrosion	83	11.3	83	83	0	0
Fittings/valve failure	35	4.8	34	34	1	1
Girth weld	11	1.5	11	11	0	0
Installation failure	5	0.7	5	5	0	0
Internal corrosion	325	44.3	323	323	2	2
Joint failure	14	2	14	14	0	0
Mechanical damage	4	0.5	4	4	0	0
Mechanical joint	24	3.3	24	24	0	0
Overpressure	13	1.8	12	12	1	1
Pipe body failure	48	6.5	44	44	4	4
Seam failure	4	0.5	4	4	0	0
Weld failure	0	0	0	0	0	0
Licensee error	9	1.2	9	9	0	0
Miscellaneous	12	1.6	12	12	0	0
Unknown	6	0.8	6	6	0	0
TOTAL	734	100	664	707	27	27
% OF INCIDENTS		100	90.4		3.7	

* Statistics include 103 pressure test failures.

All pipeline failures are inspected or an investigation is conducted into the failure mechanism. In 2009, staff conducted 329 inspections and investigated 405 incidents. The total inspections and investigations includes the 66 contact damage incidents that occurred. Inspections/investigations found 647 operations in compliance with ERCB requirements, 36 to be low risk noncompliant, and 51 to be high risk noncompliant.

Internal corrosion continued to be the main cause of pipeline failure in metallic pipelines. The majority of failures have been occurring in smaller-diameter gathering lines; either they are not designed for pigging or their production is not being properly monitored for corrosive agents and treated to mitigate the corrosion.

Failures due to external corrosion remained relatively constant in 2009 compared to historical data. Reducing failures in older pipeline coating systems continues to present challenges, such as the shielding of cathodic protection, disbondment, temperature variation, and environmental stresses.

6.9.5 Spill and Release Statistics and Inspection Results

Releases are prioritized to allow for an appropriate, timely, and effective response by ERCB field staff. The priority of a spill or release is determined by

- whether the spill is on or off lease,
- area sensitivity,
- whether the release is sweet or contains H₂S,
- type of area affected,
- environment affected,
- wildlife/livestock affected, and
- public affected.

Priority 1 spills and releases are those that pose the most serious potential environmental and public impact. Inspectors make every attempt to immediately respond to the location and conduct an inspection as soon as possible or, where this is not possible, request another regulatory agency to respond for the initial assessment.

Priority 2 spills and releases are those where a significant volume has been released or the impact on the environment is a concern. These sites are generally inspected within seven working days.

Priority 3 spills and releases are low volume and contained on site. Generally, about 25 per cent of Priority 3 spills and releases are inspected to ensure that they are satisfactorily addressed.

Figure 29 shows the priority ratings for pipeline releases compared to previous years.

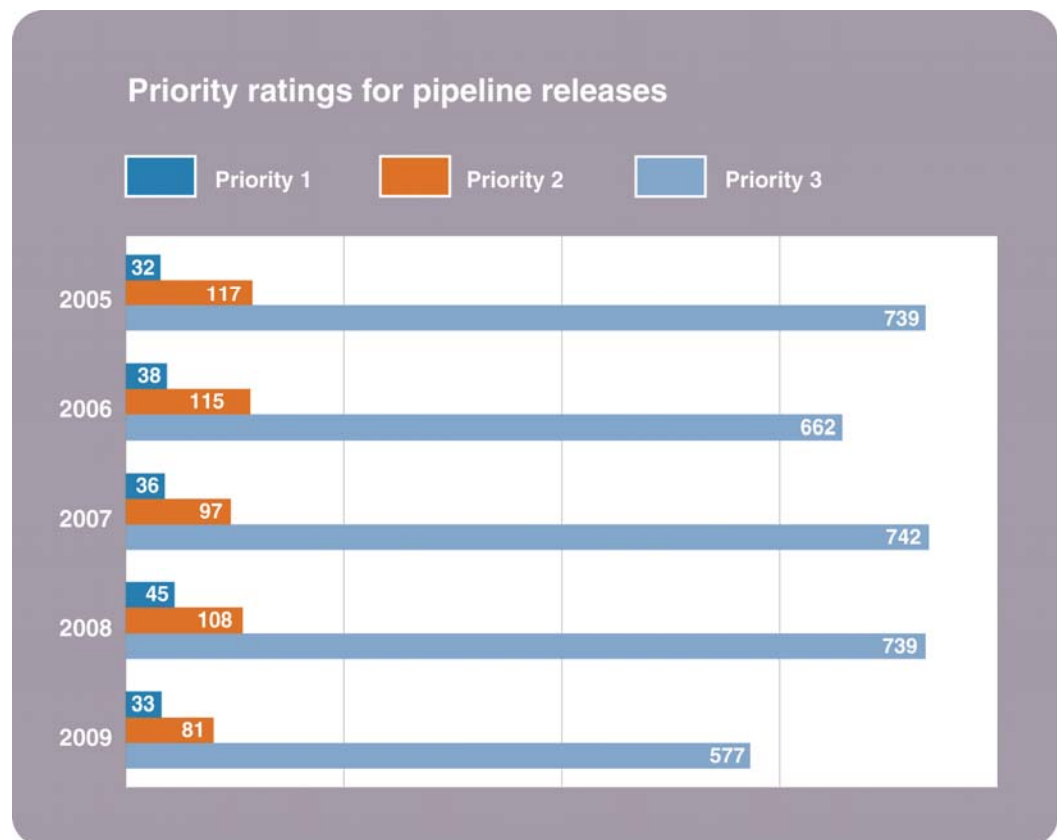


Figure 29

Table 11 summarizes the pipeline releases from January 1 to December 31, 2009.

Table 11. Pipeline release, 2009 (percentage of total)

Ruptures	3.7	Priority 1 releases	4.5
Leaks	90.4	Priority 2 releases	11.0
Hits, no release	<u>5.9</u>	Priority 3 releases	78.6
	100	No release	<u>5.9</u>
			100

In 2009, 54.3 per cent of Priority 3 spills and releases were inspected. The increase in inspections is attributed to the inspection of all releases on pipelines, including low-volume releases.

Also in 2009, inspection staff worked with industry to ensure that oilfield waste from releases was managed appropriately.

As shown in Figure 30, 1191 spills were reported in 2009. Of these, 70 were Priority 1 (5.9 per cent), 218 were Priority 2 (18.3 per cent), and 903 were Priority 3 (75.8 per cent).

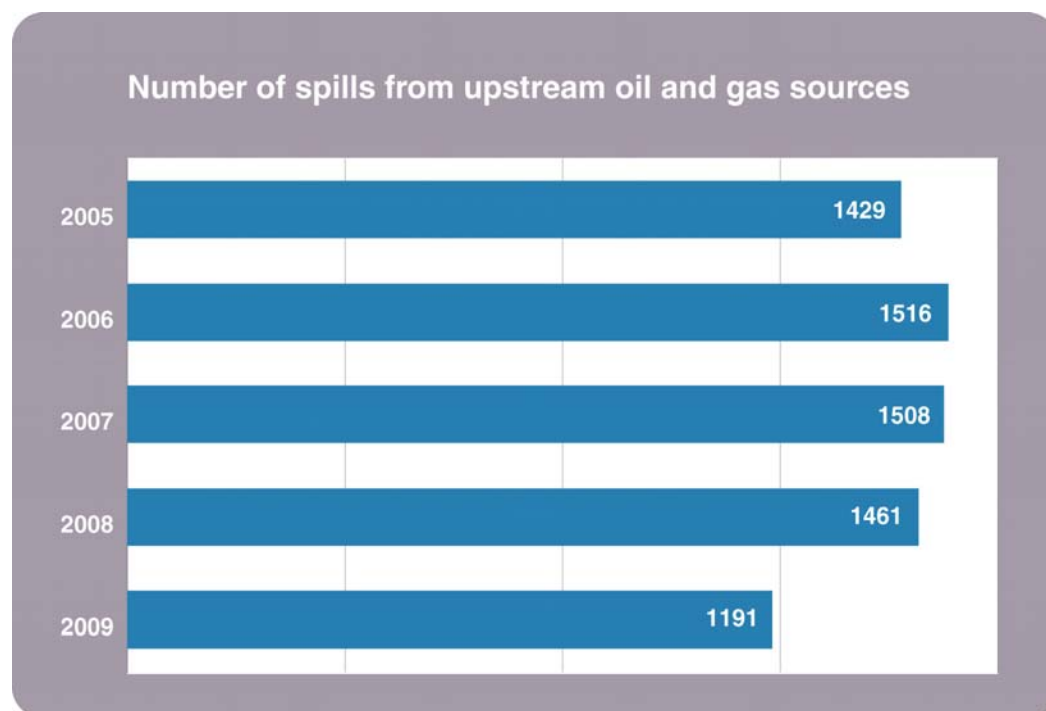


Figure 30

In 2009, more than 75 per cent of all spills were low volume and contained on lease. Follow-up inspections were conducted on the cleanup of 899 spills. The ERCB found 783 cleanups were in compliance, 80 were low risk noncompliant, and 36 were high risk noncompliant.

The two most common low risk noncompliances were licensees not notifying the ERCB of a reportable release at the first opportunity and licensees underestimating the volume of release and size of the impacted area.

The high risk noncompliances were mainly attributed to licensees not immediately notifying the ERCB of a pipeline hit during a ground disturbance or of a pipeline failure,

licensees not storing contaminated soil on a protective liner, and a release as a result of an inadequate corrosion mitigation program.

In 2010, staff will continue to meet with licensees to address ground disturbance requirements in an effort to increase their knowledge of ERCB requirements and in turn reduce the number of spills.

6.10 Air Monitoring Inspection and Compliance Results

There are two mobile ambient air monitoring units (AMUs) at the ERCB. They have analyzers capable of reading and recording H₂S and sulphur dioxide (SO₂) emissions in the parts per billion range. They also have the ability to measure and record wind speed and direction, which aids in identifying the location and source of an emission.

In 2009 a new AMU was built to replace an older unit and is now fully operational. The new unit uses solar panels as a secondary power source to reduce emissions and the carbon footprint.

ERCB technicians have also been working with infrared (FLIR) cameras. These thermal imaging cameras are primarily used for detecting leaks and fugitive emissions at oil and gas facilities. These tools assist inspection staff in identifying facilities that emit vented gas, such as H₂S, SO₂, and other hydrocarbons.

Staff conducted 744 air monitoring inspections and 246 FLIR inspections in 2009. Of these inspections, 4 facilities were found to be high risk noncompliant. The provincial compliance rate was 99.6 per cent (see Figure 31).



Figure 31

6.11 Liability Management Rating Compliance Results

The Liability Management Rating (LMR) is the ratio of a licensee's deemed assets to its deemed liabilities in both the Licensee Liability Rating (LLR) Program and the Large Facility Liability Management Program (LFP). A licensee's LMR is determined each month and also on receipt of a licence transfer application. The LMR security threshold is 1.0; licensees with a deemed-asset-to-deemed-liability ratio below 1.0 are required to provide the ERCB with a deposit equal to the difference. Table 12 summarizes the LMR assessments and compliance results.

Table 12. LMR and compliance results, 2006-2009¹

	2006	2007	2008	2009
Initial assessments	11 730	11 969	11 694	11 144
Assessment invoices	256	286	274	302
Low risk enforcement with orders issued	8	12	66	59
Compliance rate with low risk requirements ²	75%	74%	63%	80%

¹ The numbers are an amalgamation of both LLR and LFP enforcement figures.

² Low risk requirements are used to calculate the compliance rate, as there are no high risk requirements in this compliance category.

The LLR Program is based on the use of provincial averages, which may not accurately reflect the deemed assets or deemed liabilities of a particular licensee. As a result, the ERCB considers requests for review by licensees that do not meet the LLR threshold for a variance of one or more of the LLR parameters. Virtually all of the requests made by licensees are related to well or facility abandonment and reclamation variations.

6.11.1 Orphan Levy Compliance Results

The Orphan Levy is based on the revenue requirements identified in the Orphan Well Association budget. The ERCB allocates the Orphan Levy cost among the licensees subject to the LLR Program. Table 13 presents the Orphan Levy compliance results for the last five years.

Table 13. Orphan Levy and compliance results, 2005-2009

	2005	2006	2007	2008	2009
Number of invoices	869	963	908	914	877
Low risk penalty	126	156	164	124 ¹	99 ¹
Compliance rate with low risk requirements ¹	84%	82%	86%	89%	

¹ Low risk requirements are used to calculate the compliance rate, as there are no high risk requirements in this compliance category.

6.12 Unconventional Resources Inspection and Compliance Results

In 2009, inspectors based in the Fort McMurray Regional Office conducted a total of 68 inspections, 25 of which were associated with incident responses and the balance with routine inspection/audit work. No high risk noncompliances were found; 19 inspections found low risk noncompliances. The most common low risk noncompliances were housekeeping; operator failing to prevent loss, injury, or fire at an oil sands site; and operator error.

Four measurement audits were conducted, finding 5 high risk noncompliances for measurement, operating criteria, and approval conditions. Two high risk noncompliances resulted from reviewing S-23 reports of industry performance in sulphur recovery and measurement.

6.13 Enforcement Appeals

When a noncompliance is identified, the ERCB uses the process outlined in *Directive 019* to determine the enforcement action. If a licensee disagrees with the enforcement action, it is encouraged to talk to the ERCB group that issued the action. Under *Directive 019*, a licensee may submit an appeal to the ERCB Enforcement Advisor, who then reviews the information for errors of fact, regulatory requirements, and process. A decision on an appeal is made once all documentation related to the appeal has been received.

In 2009, the Compliance Assurance Section received 18 enforcement appeals, 3 related to the Facilities Applications Group, 1 to the Mineable Oil Sands Group, 2 to the Technical Operations Group, and 12 to the Field Operations Group. Of the 18 enforcement appeals received, 5 were granted, 6 were denied, 3 were rescinded by the ERCB, 2 were rescinded by the licensee, and 2 were referred to the Law Branch. Table 14 shows the number of enforcement appeals for 2005 to 2009.

Table 14. Enforcement appeals by year

2005	2006	2007	2008	2009
6	10	11	12	18

6.14 Voluntary Self-Disclosure

The ERCB's voluntary self-disclosure policy is intended to encourage licensees to proactively identify, report, and correct noncompliances without prompting from the ERCB. A voluntary self-disclosure reflects due diligence by a licensee in detecting and correcting potential violations of regulations.

The benefits of voluntary self-disclosure include

- proactive correction of noncompliance,
- no enforcement if licensees correct/address noncompliances within the timelines agreed upon with the ERCB,
- improved relationships between licensees and the regulator, and
- improved public safety, protection of the environment, conservation of the resource, and regulatory confidence.

When a licensee identifies a noncompliance, the ERCB expects it to be corrected and reported to the ERCB. The ERCB also expects licensees to take the same action as if the ERCB identified the noncompliance—for example, shut down immediately if there is a risk to public safety or environmental protection.

To voluntarily self-disclose a high or low risk noncompliance, a licensee must

- be the first party to contact the ERCB regarding the noncompliance,
- immediately correct/address the noncompliance, including suspending operations if warranted, to ensure that risk to the public or environment is mitigated, and
- develop and implement a written action plan within 60 days of a high risk noncompliance event (or in a time specified by the appropriate ERCB group).

Bulletin 2010-04: Directive 019: Compliance Assurance—Enforcement Voluntary Self-Disclosures provides further clarification regarding when and in what circumstances the ERCB will accept self-disclosure of a noncompliance as a voluntary self-disclosure.

In 2009, the Field Operations Group received 1272 voluntary self-disclosures in the following compliance categories:

- Drilling 2
- Drilling waste 8
- Gas facility 175
- Oil facility 212
- Pipeline 271
- Well site 604

The Well Operations Section received 48 voluntary self-disclosures in 2009; 31 self-disclosures were fully resolved, while 17 have been carried over to 2010 as the licensees are still working to achieve compliance. Voluntary self-disclosures were received largely in regard to the following compliance categories:

- well abandonment,
- suspended well,
- packer testing,
- surface casing vent flow/gas migration,
- well casing failure,
- shallow fracturing operations, and
- injection and disposal.

6.14.1 Voluntary Self-Disclosure Form

To facilitate the voluntary self-disclosure process, the Field Operations Group and the EPA Section developed a voluntary self-disclosure form, which was introduced to industry in December 2009. This form is intended for all licensees to use as part of the administration portion of the voluntary self-disclosure process.

The voluntary self-disclosure form

- serves as a communication tool between the licensee and the Field Centre or EPA Section,
- supports the consistent management of voluntary self-disclosure information,
- captures the requisite information for appropriate decision-making, and
- provides the licensee with confirmation that the Field Centre or EPA Section has received and accepted the voluntary self-disclosure submission.

This new process does not prevent licensees from self-disclosing by other means (e.g., phoning in a noncompliance event as the first party to contact the ERCB).

Instructions on how to complete and submit the form, as well as answers to frequently asked questions, are on the ERCB Web site www.ercb.ca under Industry Zone : Rules, Regulations, and Requirements : ERCB Forms. Licensees are also encouraged to contact one of the Field Centres or the EPA Section to discuss the new voluntary self-disclosure submission process.

7 FSOB Activity Highlights

This section details activities, programs, and committees in which FSOB staff are engaged to ensure public safety, protect the environment, and build better relationships and understanding with industry, the public, and government stakeholders. It also describes FSOB involvement with unconventional resource regulation and surveillance conducted in collaboration with ERCB staff in the Fort McMurray Regional Office.

7.1 Field Operations—Environmental Protection

In 2009, inspectors worked with industry to improve its operating practices. This included reviews of corrosion mitigation programs, equipment inspections, and ongoing training. Inspectors will continue to educate industry operators in 2010.

Spill Cooperatives, Response Training, and Prevention

To minimize environmental impacts, licensees must ensure that industry personnel are adequately prepared to respond effectively if a spill occurs. Spill cooperatives are an excellent way to meet this goal. Alberta has 17 oil spill cooperatives, one of which overlaps the Alberta/Saskatchewan border. Members of each spill cooperative share experiences, recovery techniques, and equipment. They maintain area oil spill contingency plans and have oil spill containment and recovery units strategically placed throughout the province.

ERCB inspectors participate in oil spill cooperative training exercises, which are held annually. They provide industry personnel with information on release statistics, reporting requirements, and regulation changes. The ERCB also works with the Western Canadian Spill Service, ENFORM, and industry to improve spill response, preparedness, and prevention programs.

In 2010, the ERCB will concentrate on sharing spill prevention measures during oil spill cooperative meetings and exercises.

7.2 Field Operations—Mobile Ambient Air Quality Monitoring

The FLIR cameras obtained by the group in mid-2008 and early 2009 are capable of visually detecting about 19 different hydrocarbon compounds, including methane, ethane, butane, and benzene. Staff have been conducting preliminary work with the cameras to aid them in establishing appropriate inspection and operating procedures, which will define minimum requirements for conducting field inspections. Initial usage indicates that the cameras will aid in finding the sources of leaks at facilities and in searching for emissions from underground sources during incident response.

Currently, the cameras are being used during detailed gas plant audits to quantify the number of fugitive emission sources from a facility. As of January 1, 2010, CAPP's best management practices (BMPs) for the management of fugitive emissions at upstream oil and gas facilities comes into effect. *Directive 060*, Section 8.7, refers to BMPs as a tool for industry to follow to ensure compliance with ERCB requirements.

7.3 Pipeline Operations

Pipeline Operations staff spent about 40 per cent of their time in technical advisory roles and another 40 per cent dealing with *Directive 056* applications and improving the

regulatory framework through regulatory development and projects. A summary of activities is in Table 15.

Table 15. Technical Pipeline Operations activities during 2009

Pipeline Applications	
<u>Directive 056 Applications</u>	Number
Nonhearing	
<i>Conversions</i>	
Non-sour to sour service >1% H ₂ S	8
Non-sour to sour service <1% H ₂ S	9
Substance change	<u>16</u>
Subtotal	33
<i>Resumptions</i>	
Resumption of abandoned	16
Resumption of discontinued	<u>2</u>
Subtotal	18
<i>Special pipe materials</i>	
Fibre-reinforced composite pipe	2
Stainless steel	1
Bimodal high-density polyethylene	<u>3</u>
Subtotal	6
<i>Other</i>	
Blending of substances	7
CO ₂ pipelines	6
Discretionary referral	18
H ₂ S increase	11
Self-disclosures	7
Standards/requirements not met	8
Surface pipeline	5
Flow reversal	<u>2</u>
Subtotal	64
Nonhearing applications subtotal	<u>121</u>
Hearing-related applications	18
Application audits	6
<i>Directive 056 application Total</i>	145
<u>Operations Applications</u>	
Pneumatic testing	2
Crossing agreements	12
Non-water test media	45
Other	6
Temporary flow reversal/diversion	<u>9</u>
Operations Total	<u>77</u>

In 2009, staff dealt with 222 applications; however, over the last five years, the total annual number of applications has reached as high as 424 (see Table 16). The variability in number of applications shows the significant unpredictability of the workload associated with the processing of applications.

Table 16. Total *Directive 056* pipeline application referrals by year

<i>Directive 056</i> and Operations (2009)	222
<i>Directive 056</i> and Operations (2008)	239
<i>Directive 056</i> and Operations (2007)	407
Guide 56 and Operations (2006)	324
Guide 56 and Operations (2005)	290

Many of the applications received in 2009 were unique and required more time to resolve than typical applications. In addition, many licensee voluntary self-disclosure applications dealt with multiple pipeline licences and various substances and required significant consultation with the licensee to resolve the issues. Also, in contrast to other applications, self-disclosures cannot be closed if industry does not respond in a timely fashion.

Most nonhearing *Directive 056* applications are processed in less than eight days. Audit applications and hearing-related applications take significantly more time to complete, usually due to additional information being required from the applicant to address specific technical issues.

Pipeline Operations handled an increased number of operational applications in 2009 due to increased awareness by industry of the requirements to submit applications prior to proceeding with a pressure test using non-water test media. A clear procedure to simplify the process and to speed up the processing time was created. The median time for operations applications is one calendar day, indicating that efficient methods exist for processing such applications.

In 2009, staff continued to be instrumental in helping to organize and participate in the following very successful forums for sharing of technical information:

- Biannual International Pipeline Conference in Calgary
- Biannual CANMET Banff Pipeline Workshop
- Periodic NACE Northern Region Western Conference

7.3.1 Pipeline Integrity Management Program

Pipeline operators are required to establish an integrity management program (IMP) to improve the integrity of ERCB-regulated oil and gas pipelines. In 2009, ERCB staff prepared IMP forms and guidelines, conducted a pilot assessment, and drafted assessment standards and procedures. Staff are finalizing the assessment standards and procedures to roll out the assessment process in the first half of 2010.

7.3.2 ENFORM Industry Recommended Practice 17: Ground Disturbance and Damage Prevention

FSOB staff cochaired the committee that helped to revise this industry recommended practice (IRP) on ground disturbance and damage prevention. The ENFORM Safety Council sanctioned this IRP after a thorough review process.

7.4 Well Operations

In 2009, the Well Operations Section worked closely with the Compliance Team to improve the Digital Data Submission (DDS) reporting tool for surface casing vent flow/gas migration (SCVF/GM). The submission process for SCVF/GM and suspended well notification was modified and released, accompanied by *Bulletins 2009-07* and

2009-19. All existing SCVF/GM reports that were previously closed with a reported resolution state of “Monitored as Required,” “Considered Non-Serious,” or “Casing Vent Produced” were reopened and will remain open on the DDS system until the SCVF/GM has been repaired. The ERCB no longer accepts “Monitored as Required,” “Considered Non-Serious,” or “Casing Vent Produced under the Reported Resolution field.”

In 2009, the Well Operations Section also developed and reviewed requirements for unconventional well drilling, completion, and abandonment operations requirements. An important consideration for making modifications to the regulations was the long-term integrity of abandoned oil and gas wells and alternative uses.

7.4.1 Well Operations Stakeholder Engagement

In 2009, Technical Operations staff participated in the following industry committees: Drilling and Completions Committee, Well Control and Certification Committee, IRP 3: Heavy Oil and Oil Sands Operations, IRP 5: Minimum Wellhead Requirements, IRP 21: Coiled Tubing Operations, and IRP 22: Underbalanced Drilling. This participation helped to ensure that the technical capacity of ERCB staff is on par with that of industry.

7.4.2 Well Abandonment and Reclamation

The Well Operations Section directed the current owner of the historical Turner Valley plant site (Alberta Culture and Community Spirit) to properly abandon the leaking Dingman #2 well. Abandonment operations were successfully completed in August 2009. The well was tested and no gas was seeping through the ground near the wellhead. The burning hillside within the Town of Turner Valley was extinguished as a result of the abandonment operations.

Well Operations staff completed the final phase of the Bromley Marr Waste Facility cleanup on the outskirts of Bonnyville. The last remaining small amount of slightly contaminated soil was removed and taken to an approved landfill. The ERCB advised the Town of Bonnyville that the ERCB had completed its site cleanup.

The ERCB applied for and was granted a reclamation certificate for the stratigraphic test hole that was drilled in preparation for the ERCB Peace River well control project. Weed control mitigation measures undertaken over the 2008/2009 growing seasons were deemed to be satisfactory.

7.5 Production Operations

7.5.1 Sulphur Recovery/Gas Plant Performance

The Sulphur Recovery/Gas Plant Performance Team in the Production Operations Section monitors and enforces the calendar quarter-year sulphur recovery efficiency guidelines, as required by *Interim Directive (ID) 2001-03: Sulphur Recovery Guidelines for the Province of Alberta*. The team monitors quarterly sulphur balance reports for about 100 sour gas processing plants in the province. The team also supports the [Directive 056](#) application process and assists inspection staff with plant performance issues.

During 2009, the team participated in a number of multistakeholder teams involving fugitive emissions management, fuel gas efficiency, flaring and venting, and benzene emissions from glycol dehydrators and provided advice on gas processing.

7.5.2 Sulphur Recovery Efficiencies

The efficiency at gas plants recovering sulphur was 99.0 per cent for 2009. Overall, sulphur emissions have decreased by 55 per cent since 2000, from 78 000 to 35 100 tonnes (see Figure 32).

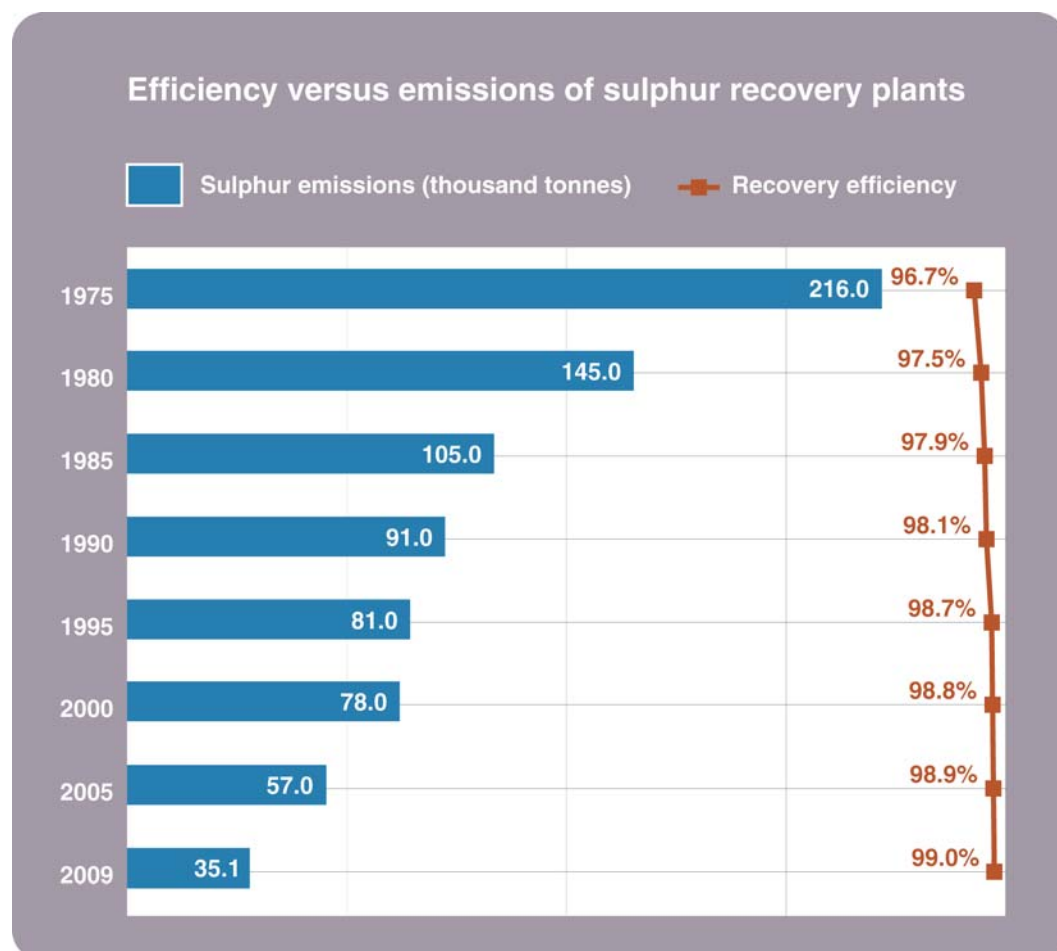


Figure 32

7.5.3 Production Measurement

In 2009, the Production Audit Team (PAT) developed and released *Directive 076*, which became effective January 4, 2010. A shift in the mandate of PAT took effect with the execution of EPAP. Under this program, PAT will continue to monitor and assess industry compliance with production measurement and reporting requirements, but will change from conducting substantive audits to monitoring industry compliance with *Directive 076* and the full implementation of EPAP.

Effective February 2010, the time available to conduct substantive audits will be reduced relative to previous years.

7.6 Unconventional Resources—In Situ Heavy Oil/Oil Sands

The Cold Lake, Athabasca, and Peace River oil sands areas produce a large percentage of Alberta's total oil sales through primary (cold production) and secondary (enhanced oil recovery) processes. The three oil sands areas are located in and administered by the Bonnyville, St. Albert, and Grande Prairie Field Centres.

In 2009, staff participated in a number of heavy oil joint industry practices and IRPs, all of which assist industry to operate in a safer and more environmentally friendly manner.

Staff also conducted a large number of inspections on unconventional operations throughout the province. Incident response, public concerns, and environmental issues remained the highest priority. Routine inspections consisted of primary and secondary production facilities, facility audits, drilling operations, well service operations, waste management facilities, oilfield waste, drilling waste, and pipelines. Inspection of unconventional resources and the resulting compliance statistics are included in this report and are not distinguished from conventional operations. Noncompliance rates in unconventional operations tracked similarly to those in conventional operations.

8 2009 Regulatory Reform and Major Initiatives

8.1 Regulatory Reform

The goal of regulatory reform is to continuously improve the clarity, relevance, and timeliness of regulatory instruments. The desired outcome is industry compliance with those regulations, thereby ensuring public safety, the protection of the environment, and conservation of energy resources.

The FSOB has primary responsibility for and oversight of 67 of the ERCB's regulatory instruments, encompassing all stages of the life cycle of wells, facilities, and pipelines.

In 2009, FSOB staff led the following regulatory initiatives:

Directive 006: Licensee Liability Rating (LLR) Program and Licence Transfer Process

A revised edition of *Directive 006* was released in September 2009. The revised edition incorporates the expansion of the ERCB's LMR assessment process resulting from the ERCB's implementation of the Oilfield Waste Liability (OWL) Program. It also contains minor administrative changes and a reorganization of information to parallel the structure of *Directive 024: Large Facility Liability Management (LFP) Program* and *Directive 075: Oilfield Waste Liability (OWL) Program*.

Directive 008: Surface Casing Depth Minimum Requirements

This directive was being revised in order to

- clarify the minimum surface casing depth requirements set out in the October 1997 edition of *Directive 008*,
- set out requirements for setting deep surface casing,
- outline conditions for exemption from setting surface casing,
- set out requirements for setting surface casing and for using a Class I blowout prevention system, and
- define standards for conductor casing.

Directive 010: Minimum Casing Design Requirements

A revised edition of *Directive 010* was released on December 14, 2009. The original edition of the directive, released in June 2008, set out a one-year grandfathering clause to use existing inventory. Subsequent reduction in drilling activity in late 2008 resulted in a large inventory of used casing that did not meet new *Directive 010* standards, but was still fit for purpose. The revised *Directive 010* allows all existing API 5CT/ISO 11960 compliant casing purchased or manufactured prior to June 20, 2008, to be used.

Directive 017: Measurement Requirements for Upstream Oil and Gas Operations

Revised editions of *Directive 017* came into effect first on February 2 and then on October 22, 2009. The directive has undergone changes since its release in 2005. *Directive 017* is released in sections, as the technology and requirements are reviewed. Subsequent revisions that address liquid and water measurement will be released in 2010. For a detailed clarification of the new requirements, refer to *Bulletin 2009-03: Revised Edition of Directive 017: Measurement Requirements for Upstream Oil and Gas Operations* and *Bulletin 2009-38: Revised Edition of Directive 017: Measurement Requirements for Upstream Oil and Gas Operations Issued*.

Directive 020: Well Abandonment

This directive sets out the requirements and planning process for well abandonment in Alberta. It includes the minimum abandonment requirements for open-hole and cased-hole wells. Technical Operations staff have been working with a multistakeholder committee to review the existing abandonment requirements, evaluate current operating procedures, and conduct a review of other jurisdictions as part of its Long-term Security of Abandoned Wells review. *Directive 020* was released for consultation after Board approval on August 26, 2009, as announced in [*Bulletin 2009-30: Revised Draft Directive 020: Well Abandonment Available on ERCB Web Site for Stakeholder Comment*](#).

Directive 027: Shallow Fracturing Operations

Directive 027 was originally released as an interim measure to set control on shallow fracturing operations, with a commitment to form a stakeholder committee to complete a more detailed review. The revised edition of *Directive 027*, with minor changes recommended by the stakeholder committee, was released on August 14, 2009, as announced in [*Bulletin 2009-28: Directive 027: Shallow Fracturing Operations—Restricted Operations*](#).

Directive 051: Injection and Disposal Wells—Well Classifications, Completion, Logging, and Testing Requirements

This directive sets out the requirements for classifying injection and disposal wells that have been developed on the basis of injected or disposed fluid such that design, operating, and monitoring requirements are consistent with the fluid. *Directive 051* has been undergoing a lengthy internal stakeholder review, as this document is used for the approval of both steam-assisted gravity drainage and high-pressure steam injection. Technical Operations staff have also been working with internal ERCB stakeholders and Alberta Environment (AENV) to revise the memorandum of understanding issued in April 2007 in [*Bulletin 2007-06: Streamlining the Review of Applications for Oilfield or Industrial Waste Fluid \(Class I\) Disposal Schemes*](#), which outlines the Class 1b approval process and the need for ministerial approval from AENV.

Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry

This directive was updated with enhancements to Section 4, completed in collaboration with Alberta Health and Wellness, Alberta Health Services, Alberta Emergency Management Agency, and Municipal Affairs. Section 4 describes public and local authority involvement in emergency preparedness and response.

Directive 075: Oilfield Waste Liability (OWL) Program

This directive and the licence transfer process outline the purpose of the OWL Program and describe the rules around deemed assets, deemed liabilities, netbacks, and security deposits. The latest edition of *Directive 075* was published in September 2009.

Directive 076: Operator Declaration Regarding Measurement and Reporting Requirements

This directive was published in coordination with the implementation of EPAP on December 16, 2009. It sets out new requirements by which operators are to declare the degree to which they have infrastructure in place to ensure compliance with ERCB measurement and reporting requirements.

In development: Cavern directive (unpublished)	Cavern construction, operations, and abandonment in Alberta have historically been administered using CSA standards and <i>Directive 051</i> . Staff have been working with multistakeholders (cavern operators and AENV) and an expert consultant to develop a standalone directive.
In development: Coal gasification	Technical Operations staff are working with internal stakeholders, AENV, and Alberta Energy to develop requirements for coal gasification that entail environmental protection, mineral equity, and safe operating practices.

8.2 Major Initiatives

In addition to regulatory initiatives, FSOB staff were involved in a number of other major initiatives in 2009.

8.2.1 Enhanced Production Audit Program

EPAP changes the way monitoring and assessment of industry operations are performed with respect to compliance with ERCB rules and regulations regarding volumetric measurement and reporting. Under this program, all industry operators that report their production and volumetric measurements to the Petroleum Registry of Alberta and/or the ERCB are required to submit an annual declaration of the state of their compliance with ERCB regulations. PAT then reviews the declarations against a set of compliance indicators. PAT discusses the indicators with industry stakeholders in an effort to proactively resolve issues. Resulting audits are controls-based.

In 2009, the second of a three-year phased approach, significant advancements were made.

- *Directive 076* was developed, published, and implemented.
- A software program (RSAM) to manage EPAP workflows for PAT and industry was implemented.
- PAT and industry users were trained to use the new processes and functions.

In 2010, the final phase of EPAP development will include

- developing, refining, and releasing compliance assessment indicators,
- involving stakeholders to ensure that they are educated and aware of the new processes, and
- monitoring and implementing RSAM enhancements as necessary.

8.2.2 Flaring and Venting Review Project

Flaring and venting assessments were conducted to determine compliance levels with respect to *Directive 060*, Section 3: Temporary and Well Test Flaring and Incinerating. The Flaring and Venting team identified companies that required additional clarification about the requirements and more specifically the DDS Flaring/Incinerating and Venting Notifications.

A review of the DDS notifications was conducted over four months. The notifications were sorted into four main categories, including late notification to the ERCB and the public, H₂S notifications, and notifications regarding larger flare and/or vent duration and volumes.

Staff examined 3774 DDS notifications and assessed 142 companies. Of those DDS notifications reviewed, 416 did not meet the criteria by which they were sorted and were selected for a further review, during which well test investigations were conducted. These further reviews found 217 in compliance, 138 with low risk noncompliances for late DDS notification to the ERCB, and 7 with high risk noncompliances for no or incomplete public notification. The remaining notifications were in compliance.

The team spent a significant amount of time ensuring that industry was informed of all deficiencies and understood the importance of proper notification. A Flaring/Venting Frequently Asked Questions (FAQ) sheet was created to clarify misinterpretations and questions received during presentations made by the team.

Currently a process is being created to review these notifications on an ongoing basis in each Field Centre.

8.2.3 Provincial Inspection Team Initiatives

A team of senior oil and gas facility inspectors has begun to rewrite *Directive 063: Requirements and Procedures for Oilfield Waste Management Facilities* and *Directive 064: Requirements and Procedures for Facilities*. These two directives will be converted to a single inspection manual, since they do not contain regulatory requirements. Release of the manual is expected in fall 2010, at which time *Directives 063* and *064* will be rescinded.

Directive 066: Requirements and Procedures for Pipelines is also being rewritten and converted to an inspection manual by members of the provincial pipeline inspection team. The release of the manual is expected in fall 2010, at which time *Directive 066* will be rescinded.

8.2.4 Pipeline Operations Initiative

Technical staff of the Pipeline Operations Section are preparing a new directive that intends to amalgamate ERCB directives, informational letters, interpretive documents, and reference tools related to pipelines into one document.

8.2.5 Legacy Initiative

The Alberta upstream oil and gas industry manages an extensive infrastructure of wells, pipelines, production facilities, and processing plants. This infrastructure is at different stages of its life cycle, ranging from planned projects and newly operational entities to inactive, decommissioned, and abandoned sites.

The inventory of legacy infrastructure has implications with respect to constraints on future surface land uses, localized risks to public health and safety, risks of environmental contamination, and liabilities to industry and the province. Consequently, in 2009, the ERCB established a comprehensive upstream oil and gas legacy initiative to address end-of-lifecycle infrastructure and activities. This initiative, which the ERCB considers a strategic priority and has included in its 2010 Strategic Plan, includes a number of key legacy projects. An evaluation of risks associated with these projects will provide an understanding of the protection provided by current requirements, help determine priorities, and allow proper sequencing of various legacy initiatives to proceed.

Also, in late 2009, the Office of the Auditor General's recommendation on monitoring the timeliness of abandonment activities was included in the Government of Alberta's

Regulatory Alignment and Enhancement Project. This project is evaluating appropriate timelines for abandonment, reclamation, and remediation of oil and gas wells and involves AENV, Sustainable Resource Development, Alberta Energy, and the ERCB. FSOB staff are currently developing a tool to identify well sites that should be abandoned as part of the project, with completion expected in late 2010.

8.2.6 Liability Management Group Initiatives

In 2009, the FSOB established a Liability Management Group, which is currently leading or participating in the following multiyear initiatives.

Mining Financial Security Program (MFSP): The ERCB is participating in the AENV-led development of a liability management program for oil sands and coal mining operations to replace existing security programs. The proposed program is risk-based, with security deposits required when specific conditions occur, including the end of mine life. The proposed MFSP program was finalized in 2009. If approved, the ERCB would continue to participate in aspects of the MFSP implementation and operation.

Oil and Gas Transmission Pipeline Liability Management Program: In its 2007 annual report, the Office of the Auditor General recommended that the ERCB develop a liability management program for transmission pipelines under its authority. The basis for the recommendation is the exclusion of transmission pipelines from the Orphan Fund, which could pose a financial risk to the Government of Alberta. Identification of physical issues that lead to potential financial risks was completed in 2009. The ERCB is identifying the nature and extent of the issues and risk factors, which will be used to determine the need for program development.

Trade Investment and Labour Mobility Agreement (TILMA): In 2009, staff commenced negotiations with British Columbia officials and the British Columbia Oil and Gas Commission to address British Columbia's concerns respecting Alberta residency requirements for licensees. Negotiations include the development of a mutual recognition agreement, enforcement reciprocity, and coordination between the ERCB and the British Columbia Oil and Gas Commission. Recently Saskatchewan entered into TILMA, and a determination of regulatory equivalency between jurisdictions is required. Work on the Saskatchewan initiative is scheduled to commence in 2010.