ST57-2005

Field Surveillance Provincial Summary

January-December 2004

Alberta Energy and Utilities Board

ALBERTA ENERGY AND UTILITIES BOARD
ST57-2005: Field Surveillance Provincial Summary, January-December 2004

May 2005

Published by

Alberta Energy and Utilities Board
640 – 5 Avenue SW
Calgary, Alberta
T2P 3G4

Telephone: (403) 297-8311
Fax: (403) 297-7040

Web site: <www.eub.gov.ab.ca>

For media inquiries, contact Bob Curran at (403) 297-3392

For inquiries on the individual sections of the report,
Section 1: Summary, contact Rob Barber at (780) 460-3817
Section 2: Drilling and Servicing, contact Paul Saulnier at (780) 460-3809
Section 3: Oil Production, contact Chris Grant at (403) 297-6687
Section 4: Gas Production, contact Shawn Woodford at (403) 297-5906
Section 5: Pipeline, contact Murray Barber at (780) 538-5664
Section 6: Environment, contact Glen Brosinsky at (403) 297-6971

Contents

(continued)

Figures

(continued)

Tables

Executive Summary

In 2004, industry activity increased to record levels, while industry compliance with EUB regulations has improved. The EUB works hard to ensure that companies comply with our regulations so that the development of Alberta's energy resources is safe and responsible.

In Alberta there are 195 000 nonabandoned wells, 18 091 oil batteries and associated satellites, 804 gas plants, 6910 gas batteries and compressor stations, and over 350 000 kilometres (km) of pipelines. The Field Surveillance Branch annually inspects a portion of these to ensure that energy projects are constructed and operated safely. EUB field staff enforce standards and conditions set out in licences, approvals, and EUB regulations and requirements using a prioritized inspection system based on operator performance, sensitivity of the location, and inherent risk of the operation, referred to as OSI.

Operating out of eight EUB Field Centres throughout Alberta, field staff inspect construction and operations at oil, gas, and oil sands facilities (including pipelines, compressors, and processing plants). They respond to emergencies and public complaints on a 24-hour basis and ensure a consistent approach to enforcement of requirements with noncompliant operators.

Field Surveillance staff focus on three primary goals in the oil and gas sector: 1) reduce potential environmental and public safety impacts through inspections and enforcement actions, 2) provide timely and effective response to incidents to minimize the effects on the public and environment, and 3) improve existing compliance rates by increasing industry's understanding of EUB requirements and the public's understanding of the EUB and its services.

Inspections

The EUB carried out 15 379 inspections of Alberta energy facilities in 2004.

In 2004, industry continued to improve its compliance record to the best levels the EUB has recorded. The percentage of satisfactory inspections increased from 71.5 per cent in 2003 to 77.5 per cent in 2004, while the overall percentage of major unsatisfactory inspections decreased from 3.0 per cent in 2003 to 2.0 per cent in 2004 and the minor unsatisfactory inspections were reduced from 25 per cent in 2003 to 20.5 per cent in 2004. There were 2 serious unsatisfactory inspections in 2004, compared to 7 the previous year.

While the number of producing oil and gas wells has increased 54 per cent in the past five years, there has been a reduction in major unsatisfactory inspections from 5.6 per cent to 2 per cent during this period. The EUB believes the reduction of major unsatisfactory inspections is a good indicator of industry compliance.

Enforcement

The EUB's inspection results indicate that most Alberta energy industry operators strive to comply with EUB regulations, requirements, and programs. However, companies that fail to meet requirements or follow EUB direction are subject to escalating enforcement consequences. Enforcement actions always include deadlines for fixing a problem and may be reinforced by penalties, such as temporary or long-term suspension of operations.

Over the past five years, the EUB has suspended operations of 734 facilities. In 2004, the EUB suspended 118 facilities from operating until the noncompliance issue was rectified, compared to 110 in 2003, a 7 per cent increase.

Blowouts

Drilling and servicing in Alberta over the last five years has been busier than ever, with over 75 000 wells drilled. This has resulted in many challenges for both industry and the EUB, with the focus on the drilling and servicing of wells safely, with minimal impact on the environment and the public.

In 2004, four blowouts occurred during the drilling of 18 572 wells, a record drilling year in Alberta. All four were freshwater flows and resulted in no significant impact on the public or the environment. In addition, there were four blowouts during servicing operations. Two of the blowouts occurred on sour wells, while the other two were on sweet wells. Two of the four blowouts are attributed to equipment failure, one to operator error, and the other is under investigation. While three of the blowouts were of short duration (two days or less), the remaining blowout lasted 30 days and required the drilling of a relief well to bring it under control. This sour blowout occurred adjacent to a populated centre and impacted both the public and the environment.

Blowouts during drilling and servicing operations are among the most serious incidents for well operations and have the potential to cause public safety and environmental impacts. The EUB regards the number of blowouts[*] and kicks[**] as a primary indicator of industry's drilling and servicing performance and pays particularly close attention to industry's response to these incidents.

The EUB has expanded the review of blowouts to include the category "other" in the Drilling and Servicing section of the report. The EUB has amalgamated blowout information into one section of the *Field Surveillance Provincial Summary* for better clarity and understanding of blowouts in Alberta. In 2004, 15 blowouts in the "other" category occurred. One blowout was sour and 14 were sweet. Eight of these blowouts are attributed to third-party damage, with some type of vehicle, construction, or farm implement striking a well. Three were the result of equipment failure, and the remaining four were caused by casing failures at enhanced recovery operations in northeast Alberta. All blowouts were of short duration (less than two days) and had minimal environmental impact. The EUB investigates the causes of all blowouts, which assists staff to identify when changes to equipment, procedures, or regulations are required to continually improve industry standards.

There were 94 kicks recorded in 2004, which equates to a kick occurrence rate of about 5 kicks per 1000 wells drilled. This rate has remained constant for the past five years and is a significant improvement over the years prior to 1998, when the kick occurrence rate was about 23 kicks per 1000 wells drilled.

---

[*] A blowout is 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 flowing from one formation to another formation(s) (underground blowout) that cannot be controlled by increasing the fluid density. Control can only be regained by installing additional surface equipment and/or replacing existing equipment to allow shut-in or to permit the circulation of control fluids or by drilling a relief well.

[**] A kick is defined as 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.

Pipelines

The pipeline failure rate in Alberta has dropped by 27% since 2000. The number of pipeline failures per 1000 km of pipeline was 2.4 in 2004 compared with 3.3 in 2000.

A total of 847 pipeline failures occurred in 2004, an increase from 796 in 2003. The increase in failures can be attributed in part to more pipelines in the province, as the failures/1000 km was unchanged at 2.4, a substantial improvement over the 1988 benchmark of 5 failures/1000 km.

The majority of failures are occurring in smaller-diameter gathering lines, primarily the 60.3 millimetre (mm) to 114.3 mm systems.

Corrosion continues to be the main cause of pipeline failures. Internal corrosion failures are lower compared to historical data, down from 53 per cent over the period 1980-2004 to 44 per cent in 2004. External corrosion remained relatively constant in 2004 compared to historical data.

Staff review all pipeline failure incidents. When a pipeline failure occurs, the licensee is required to do an integrity assessment on the pipeline segment that failed and an engineering assessment on the pipeline system that it operates in.

All failures are inspected or an investigation is conducted into the failure mechanism. In 2004, field staff conducted 407 inspections and investigated 440 incidents. There were 40 minor unsatisfactory inspections, 52 major unsatisfactory inspections, and no serious unsatisfactory inspections. All unsatisfactory inspections were brought into compliance.

Field staff conducted 564 pipeline construction and test inspections in 2004, a 28 per cent increase over 2003. Of the 2004 inspections, 536 were satisfactory, 18 were minor unsatisfactory, 9 were major unsatisfactory, and 1 was serious unsatisfactory. All unsatisfactory inspection items were brought into compliance. This compares to 439 pipeline construction and test inspections conducted in 2003, when there were 405 satisfactory inspections, 25 minor unsatisfactory inspections, 8 major unsatisfactory inspections, and 1 serious unsatisfactory inspection.

Sulphur Recovery

Sulphur recovery efficiencies at gas plants recovering sulphur is at 99.0 per cent. Overall, sulphur emissions have decreased by 26 per cent since 2000 (from 78 000 to 58 000 tonnes of sulphur emissions). This decrease is due to the declining sulphur inlets at these plants and the EUB/Alberta Environment *Interim Directive (ID) 2001-3: Sulphur Recovery Guidelines for the Province of Alberta*, which has resulted in improved performance.

Spills

A total of 1443 spills occurred in 2004, an increase of 4.5 per cent from 1381 spills in 2003. Of the 1443 spills:

- 50 were priority 1—greatest potential for environmental and/or public impacts (3.5 per cent),

- 274 were priority 2—significant volume of product released or the potential for environmental impacts (18.9 per cent), and
- 1119 were priority 3—low or medium volumes (77.6 per cent).

Of the 1443 spills, 787 were the result of pipeline failures, while the other spills were from sources such as oil and gas facilities, wells, drilling and service rigs, and tank trucks.

It is important to note that more than three-quarters of all spills were low volume and were usually contained on lease. Inspections were conducted on 620 spills. There were 524 satisfactory spill inspections, which indicates that these spills were properly cleaned up with no intervention from the EUB. There were also 45 minor unsatisfactory spill inspections, 51 major unsatisfactory spill inspections, and no serious unsatisfactory spill inspections. The spill volumes of hydrocarbon liquid and produced water in 2004 were 8571.5 cubic metres (m^3) and 15 255.2 m^3 respectively. This is a 26.7 per cent increase in hydrocarbon liquid spilled compared to 2003 and a 4.5 per cent decrease in produced water spilled compared to 2003. Although there was a 4.5 per cent increase in the frequency of spills, the increase in hydrocarbon liquid spilled is primarily due to three large spills.

Western Canadian Spill Service (WCSS), Petroleum Industry Training Service (PITS), industry, and the EUB are working together to improve spill prevention programs. Spill response training will continue to improve industry response capabilities and reduce the environmental impacts from spills. The EUB will concentrate on proactive spill prevention measures at oil spill cooperative meetings and exercises in 2005.

Air Monitoring

In 2004, the EUB's two mobile air monitoring units conducted a total of 542 inspections, compared to 695 the previous year. Inspections were down due to staff training, maintenance, and one unit being dedicated to a blowout for about one month. The percentage of unsatisfactory inspections decreased from 4.7 per cent in 2003 to 3.4 per cent in 2004. Industry continues to be proactive with respect to reducing emissions from oil and gas facilities.

Waste Management Facilities

In 2004, field staff conducted 104 waste management inspections, resulting in 67 satisfactory inspections, 34 minor unsatisfactory inspections, 3 major unsatisfactory inspections, and no serious unsatisfactory inspections. Off-lease odours and staining/spillage were the most common deficiencies identified. All facilities were brought into compliance. This compares to 72 waste management inspections conducted in 2003.

Major Initiatives

- The full implementation of the computerized Field Inspection System (FIS) further improved the accuracy of EUB information and increased the efficiency of inspections.

- All requirements for emergency preparedness and response were compiled into *Guide 71: Emergency Preparedness and Response Requirements for the Upstream Petroleum Industry*.
- The EUB, Sustainable Resource Development, Alberta Environment, and Natural Resources Conservation Board staff participated in workshops to improve the understanding of the roles and responsibilities of each group, reduce overlap, and identify ways to improve working relationships at the field level.

Responding to Public Concerns

Field Surveillance staff respond to all complaints within our jurisdiction, with the focus on ensuring prompt, effective, and lasting resolution of problems identified.

In 2004, there was a 4 per cent increase in public complaints compared to 2003. Since some complaints recorded more than one concern, the EUB identified 965 issues associated with the 850 complaints, compared to 921 issues associated with 817 complaints in 2003.

Public Involvement

In 2004, staff were involved in 167 facilitations, of which 131 were completed, 114 were successfully resolved, and 36 were carried over to 2005. This compares to 169 facilitations in 2003, of which 127 were completed and 94 were successfully resolved.

The EUB also participated in 62 open houses in 2004 in an effort to answer questions, address issues, and improve the public's understanding related to proposed development.

Synergy groups are another effective way for the public and industry to identify and address energy issues. These groups are usually made up of public, industry, and government representatives. The size, structure, and membership of a synergy group depends on factors such as population, production type, industry activity, geographical location, and sensitivity of an area. EUB field staff participate in most of the 59 groups and strongly endorse this cooperative approach as an effective way to improve communication and identify and address issues.

The synergy movement in Alberta, coordinated by Synergy Alberta, continued to gather support in 2004, including the creation of a vision for the coming decade: Synergy is the catalyst to achieve a principled, balanced, and sustained approach to resource development for Albertans.

1 Summary of Inspection Activity, Enforcement Action, Public Complaint Statistics, Stakeholder Involvement Efforts, and Major Initiatives

Loading oil into truck from tank farm

1.1 Introduction

This *Provincial Summary* report provides readers with information and statistics related to the activities of the Alberta Energy and Utilities Board (EUB/Board) Field Surveillance Branch. In order to allocate resources more efficiently and determine future actions to improve industry's understanding of and compliance with EUB requirements, Field Surveillance analyzes data to predict trends.

The EUB Field Surveillance Branch has eight Field Centres located throughout Alberta. A suboffice of the Grande Prairie Field Centre is located in High Level. (See Figure 1.) In addition, the EUB has a regional office located in Fort McMurray responsible for oil sands development, mining, and processing.

1.2 Role of Field Surveillance Staff

Field staff have three primary goals, as part of the EUB's overall surveillance and enforcement role.

1) **Licensee/Operator Field Performance**: Reduce potential environmental and public safety impacts from oil and gas activity by

Figure 1. EUB Field Centre boundaries and Fort McMurray office

- inspecting drilling and service rigs, oil and gas production facilities, and pipelines to ensure that licensees are in compliance with all applicable standards, specifications, and approval conditions;
- focusing inspection activities on higher-risk facilities, such as sour gas wells, pipelines, and facilities located near environmentally sensitive locations;
- focusing on problem licensees with poor inspection records, with the goal of long-term improvements; and
- taking appropriate enforcement action when noncompliance occurs.

2) **Incident Response**: Timely and effective response to minimize the effects on the public and environment from incidents related to the oil and gas industry by

- responding to oil and gas emergencies;
- responding to and addressing complaints related to energy development and environmental issues; and

- monitoring the cleanup of oil and saltwater spills.

3) **Frontline Stakeholder Understanding and Awareness**: Improve existing compliance rates by increasing industry's understanding of EUB requirements and increasing the public's understanding of the EUB and its services by
   - attending meetings with the public and licensees to assist in resolving issues;
   - participating in community meetings to answer questions and provide information about the EUB's regulatory process;
   - educating industry on new and revised requirements; and
   - meeting with local authorities, communities, and synergy groups and explaining the EUB's roles and responsibilities.

The following sections summarize Field Surveillance Branch inspections, enforcement, public complaints, stakeholder involvement activities, and other key initiatives.

1.3 Inspections

The Field Surveillance Branch continues to prioritize its inspection activities based on the weighting of three key criteria—*operator* (licensee/contractor) history, site *sensitivity,* and *inherent* risk (OSI)—with respect to the facility/operation. Field staff focus on licensees with previous unsatisfactory inspections, including those with repeat noncompliance. 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 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 total number of initial field inspections/investigations increased from 7910 in 2003 to 10 167 in 2004. The 28.5 per cent increase was due in part to an increased focus by the EUB on inspections and system improvements with the Field Inspection System (FIS) (see Section 1.71), which has improved the efficiency of inspection staff. In addition to the 10 167 initial field inspections, 5212 well site inspections were conducted and are included in the 2004 statistics. FIS has improved staff's ability to access well site inspection data and information, and these statistics will be included in future *Provincial Summary* reports.

Throughout this report, the terms "satisfactory" inspection and "minor," "major," and "serious" unsatisfactory inspections are used. It is important that the definition of each is understood to properly interpret the statistics. There are numerous requirements in each inspection discipline, and even if one noncompliance item is identified, the inspection is considered unsatisfactory. The definitions below include those for a minor, major, and serious unsatisfactory event/inspection from *Informational Letter (IL) 99-4: EUB Enforcement Process, Generic Enforcement Ladder, and Field Surveillance Enforcement Ladder* and apply to these terms throughout this report:

- **Satisfactory event/inspection**—A licensee is found in compliance with all regulations/requirements.

- **Minor unsatisfactory event/inspection**—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 minor unsatisfactory inspection items are

- pipeline signage missing, defaced, or displaying incorrect information,
- garbage and debris not stored in a reasonable manner at an oil or gas facility, and
- meter calibrations not completed at an oil and gas facility.

- **Major unsatisfactory event/inspection—**A contravention of regulation(s)/ requirement(s) is found that the licensee has failed to address and/or that has the potential to cause an adverse impact on the public and/or the environment.

  Examples of major unsatisfactory inspection items are

  - failure of blowout prevention (BOP) equipment on a drilling or service rig,
  - hydrogen sulphide (H_2S) release causing odours off lease at an oil battery, and
  - not properly informing stakeholders of proposed development and/or application, in accordance with *Guide 56: Energy Development Application Guide and Schedules.*

- **Serious unsatisfactory event/inspection—**A total disregard for regulation(s)/ requirement(s) is found that is causing or may cause a significant impact on the public and/or environment or an instance of fraud is found.

  Examples of serious unsatisfactory inspection items are

  - conducting an activity without an approval where an approval is required,
  - unaddressed release into water when the licensee was aware but took no action, and
  - BOP equipment missing where required on a drilling or service rig.

In 2004, industry continued to improve its compliance record, as the percentage of satisfactory inspections increased from 71.5 per cent in 2003 to 77.5 per cent in 2004. The overall percentage of major unsatisfactory inspections decreased from 3.0 per cent in 2003 to 2.0 per cent in 2004, while the minor unsatisfactory inspections were reduced from 25 per cent in 2003 to 20.5 per cent in 2004. There were 2 serious unsatisfactory inspections in 2004, compared to 7 the previous year.

The decrease in the unsatisfactory inspection percentages may be attributed to industry's increased understanding of EUB requirements and industry proactively identifying issues and ensuring compliance.

EUB Action

- The EUB will continue to encourage licensees to proactively identify issues and ensure compliance. In 2004, Field Surveillance staff approved plans to ensure compliance from 49 licensees that involved 908 licensed oil and gas production facilities.

- Staff will continue to focus on pipeline corrosion, noncompliant licensees, air monitoring activities, reduction of odours, and improving communication with synergy groups[1] and communities throughout the province.

[1] To ensure that the impact of resource development and operations is minimized on an ongoing and proactive basis, synergy groups are formed to identify issues and work on collaborative solutions to the problems identified. Synergy groups usually involve public, industry, and appropriate government representatives. EUB staff assist and

Table 1 summarizes the field inspections that occurred in 2004 and includes the number of initial[2] inspections and reinspections[3] in each category. Each inspection category includes the number of satisfactory, minor, major, and serious unsatisfactory inspections.

Table 1. Field inspections/investigations, 2004[1]

	Initial	Satisfactory	Minor unsatisfactory	Major unsatisfactory	Serious unsatisfactory	Reinspection
Drilling rigs	528	446	56	25	1	0
Service rigs	333	293	31	9	0	0
Oil production facilities	3 893	2 976	872	45	0	63
Gas production facilities	2 864	2 131	711	22	0	32
Pipeline construction/ testing	564	536	18	9	1	28
Pipeline failure inspections	763	671	40	52	0	92
Pipeline operations inspections	285	188	69	28	0	97
Pipeline contact damage inspections	84	64	2	18	0	20
Spill inspections	620	524	45	51	0	0
Waste management facilities	104	67	34	3	0	3
Drilling waste management						
-Nonroutine inspections	9	8	1	0	0	0
-Routine inspections	120	94	11	15	0	5
Well site inspections	5 212	3 921	1 256	35	0	0
TOTAL	15 379	11 919	3146	312	2	340

[1] For definitions of minor, major, and serious unsatisfactory inspections, see Section 1.3. Details for each inspection category are found in various sections throughout this report. Well site inspections have been included in 2004's inspection results but were not included in previous years.

1.4 Enforcement

Staff use the process detailed in *IL 99-4* to ensure that a firm, fair, and consistent approach is taken in all noncompliance situations. Enforcement actions escalate to a higher level if a licensee repeatedly fails to meet EUB requirements. The enforcement process has

- improved EUB staff consistency, efficiency, and effectiveness,
- increased public safety, minimized environmental impact, and improved conservation,
- created a level regulatory playing field for industry, and
- improved industry accountability and the overall compliance rate.

Licensees that do not comply with the requirements or fail to follow EUB direction are subject to escalating enforcement consequences. A licensee's required response to EUB direction and subsequent continued compliance with regulations will result in its compliance status reverting back to satisfactory.

support the organization of these groups, but the strength and success of the groups lie in the direct involvement of participants.

[2] An initial inspection is the first inspection on a facility in a designated time period.

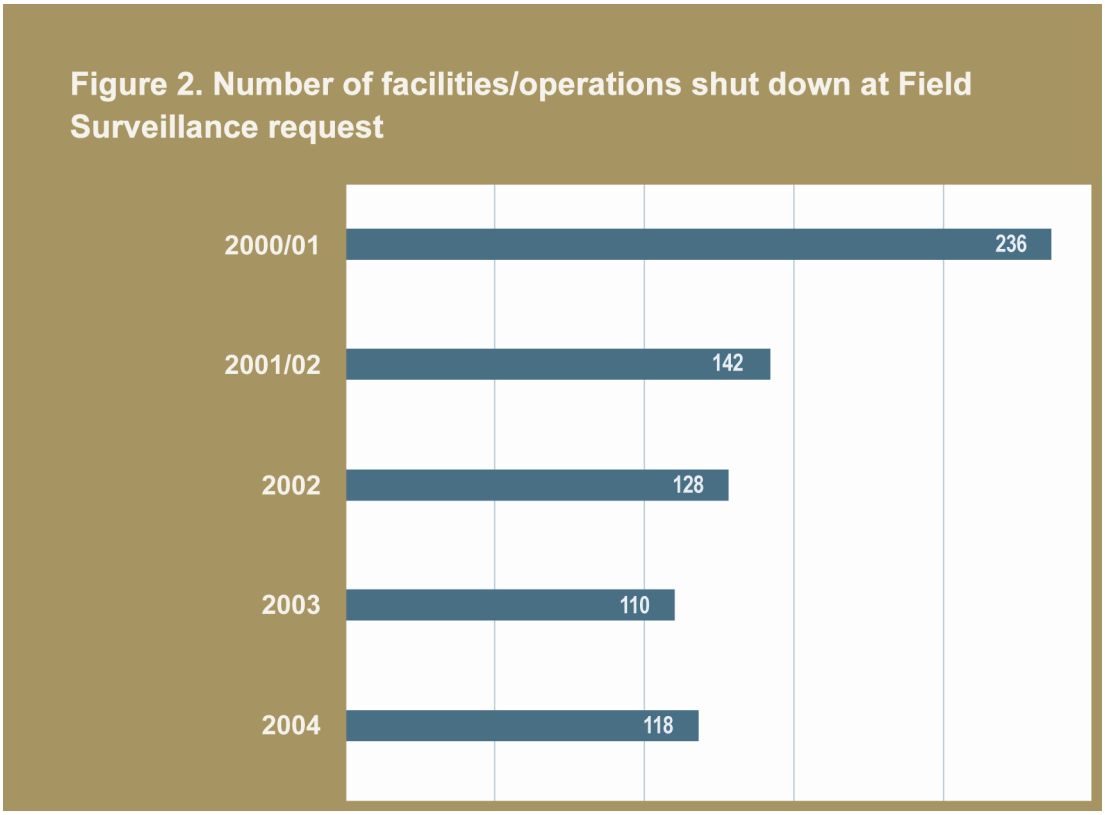
[3] A reinspection is a follow-up to a deficiency found at a facility during the initial inspection.

Table 2 summarizes the oil and gas operations that were shut down in 2004 as a direct result of EUB enforcement action (also see Figure 2).

Table 2. Facilities/operations shut down at Field Surveillance request, January 1 to December 31, 2004

Type	Approximate number of suspensions	Average duration of shutdown	Most common reasons for suspensions
Drilling rigs	25	4 hours	• Operational failure of BOP/accumulator system • Crew training
Service rigs	9	3 hours	• Operational failure of BOP/accumulator system
Oil production facilities	22	39 days	• H_2S emissions • Spills
Gas facilities	6	8.5 days	• No dike where required • Unaddressed spill
Pipelines under construction	7	8 days	• Ground disturbance activities
Pipelines in operation	49	49 days	• Corrosion integrity work
TOTAL	**118**		

Figure 2. Number of facilities/operations shut down at Field Surveillance request



1.5 Public Complaints

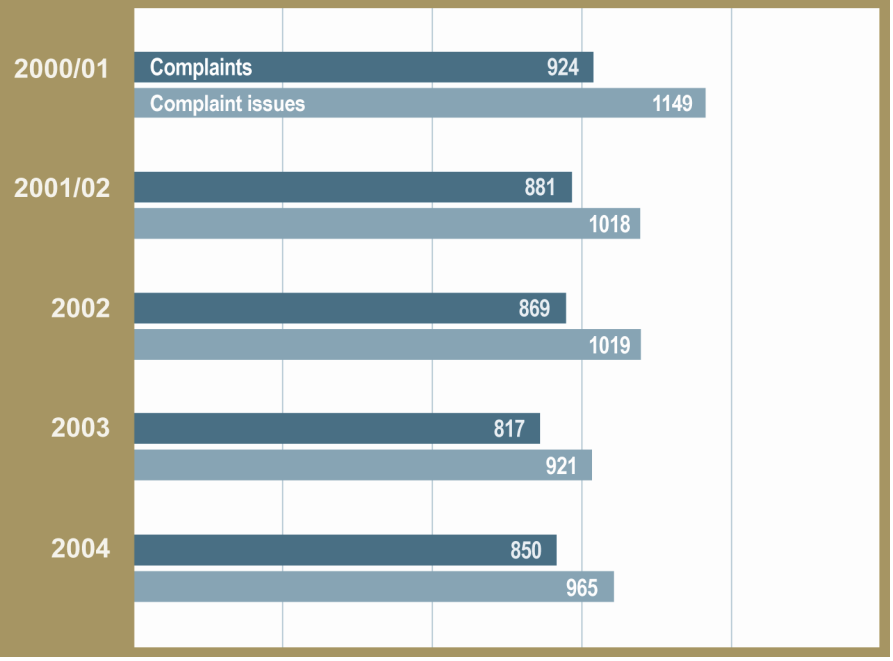
1.5.1 EUB Response to Public Complaints

Energy exploration and development activity continued at a record pace in 2004. The EUB recognizes that with this high activity level there will be associated public concerns. Responding to and effectively addressing these concerns is a top priority of field staff.

Field staff respond to all complaints related to upstream oil and gas activities, with the goal of ensuring prompt, effective, and lasting resolution to the problems identified. When a public complaint is received that is outside the EUB's jurisdiction, the individual with the complaint is promptly directed to the appropriate government agency so the matter can be addressed.

In 2004, there was a 4 per cent increase in public complaints compared to 2003. Since some complaints identified more than one issue, the EUB recorded 965 issues associated with the 850 complaints (see Figure 3).

Figure 3. Number of complaints and complaint issues recorded



EUB Action

- The EUB will continue to emphasize to industry the benefits and importance of proactive and effective communication with the public. In addition, we will focus on educating the public about the EUB and industry's roles and responsibilities when development occurs.

1.5.2 Complaint Follow-up

In an effort to gauge the level of satisfaction with both EUB and industry responses, we conduct a random complaint call-back program. The information gathered is analyzed to ensure that appropriate complaint response procedures are being used by the EUB and industry.

Results of the 2004 Complaint Call-Back Survey indicate that

- 70 per cent of the individuals surveyed said their concerns were satisfactorily resolved, compared to 58 per cent in 2003,
- 53.5 per cent of the individuals surveyed were satisfied with the licensee response, compared to 53 per cent in 2003, and
- 94 per cent of the individuals surveyed were satisfied with the response from the EUB, compared to 88 per cent in 2003.

EUB Action

- In 2004, the EUB will continue with its random complaint call-back program to gauge whether we are responding effectively to the public.

1.5.3 Types of Public Complaints

The EUB receives complaints regarding the upstream petroleum industry on a variety of issues. Four of the most common concerns are operational impacts (noise, fire, flare, smoke, spill, nuisance fire), odours (H_2S, sulphur dioxide [SO_2], total hydrocarbon content [THC]), physical impact (lease management, property damage, public hazard, water well), and health (human and animal) (see Figure 4). Odour complaints represented 30 per cent of all public complaints received in 2004.

Figure 5 indicates that well installations were the source of nearly 50 per cent of public complaints.

EUB Action

- Throughout the year, staff make presentations to industry outlining the most common sources and causes of public complaints and describing measures to reduce the impacts. This proactive communication with industry groups and during licensee awareness sessions will continue in 2005. In addition, staff will continue to hold meetings with licensees in areas of the province with sour gas production in a continuing effort to reduce transient H_2S emissions.

Figure 4. Distribution of complaints by most common concerns

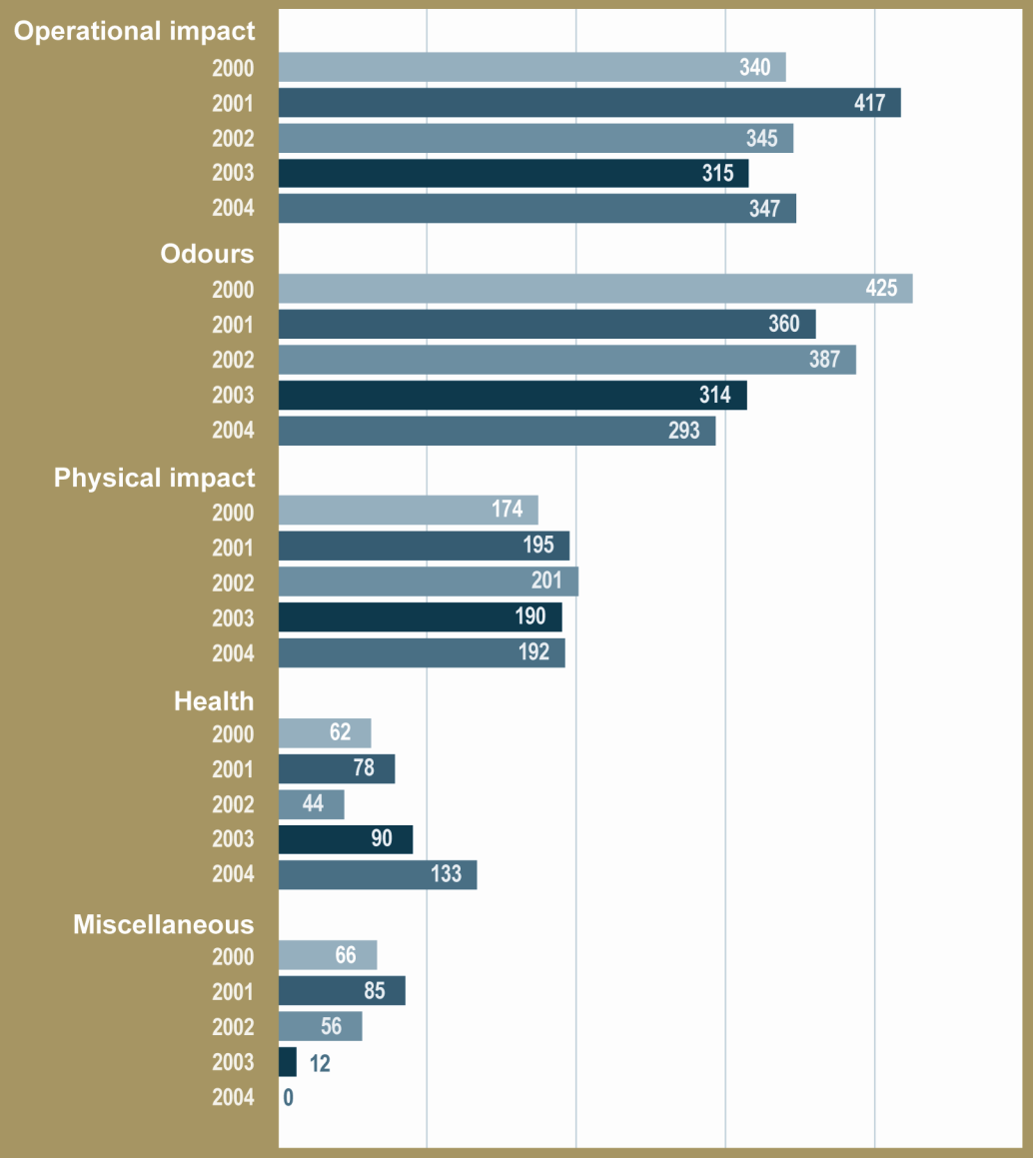
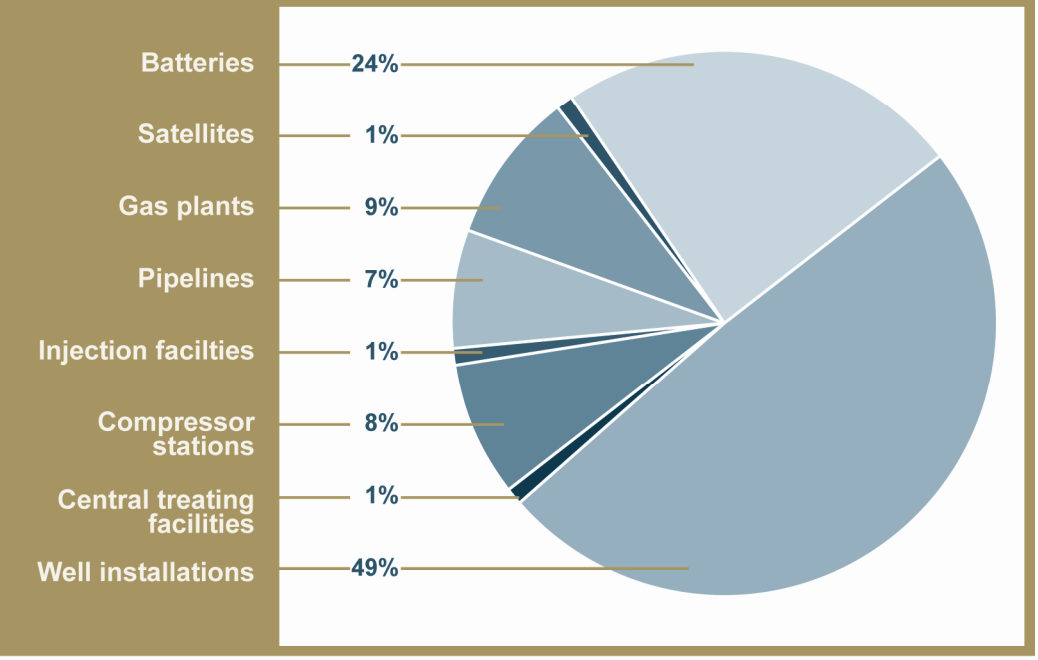


Figure 5. Public complaints by source, 2004



1.6 Stakeholder Involvement Activities

1.6.1 Synergy Groups

Synergy groups are an effective means of identifying and addressing issues. These groups are usually made up of public, industry, and government representatives, and their size, structure, and membership depend on factors such as population, industry activity, geographical location, and sensitivity of an area. Field staff participate in most of these groups and strongly endorse this cooperative approach as one of the most effective ways to improve communication and to identify and address issues. Table 3 lists the 59 active synergy groups located throughout the province.

The synergy movement in Alberta, coordinated by Synergy Alberta, continued to gather support in 2004. At the October 2003 conference *Synergy Supporting Synergy*, participants developed the following vision for the coming decade: Synergy is the catalyst to achieve a principled, balanced, and sustained approach to resource development for Albertans.

In May 2004, volunteers met to develop a comprehensive plan that community-based groups can use as a resource for networking, information sharing, educating, and learning opportunities. For further details regarding the synergy-related events and information, see the Synergy Alberta Web site at www.synergyalberta.ca.

EUB Action

- In 2005, we will continue to support synergy groups throughout the province and the Synergy Alberta support system.

Table 3. Active synergy groups in Alberta

Bonnyville Field Centre
- Alberta Utility Location and Coordination Council
- Bonnyville Oil Producers Trucking Committee
- Cumulative Effects Monitoring Association (CEMA)
- Lakeland Industry & Community Association (LICA)
- Marie Lake Landowners Association
- Muriel Lake Basin Management Society
- Sask-Alta Waste Disposal Coop (SAWDC)
- Stop and Tell Our Politicians (STOP)
- Wood Buffalo Environmental Association

Grande Prairie Field Centre
- Chinchaga Operators Synergy
- County Industrial Operators Group
- Greater Kakwa Area Citizens Group
- Hay/Zama Committee
- Happy Valley Surface Rights Committee
- Peace Air Shed Zone
- Peace Arch Operators Group
- Rainbow Lake Operators
- Saddle Hills Awareness Group
- SPCA Beaverlodge Crime Prevention
- Valleyview Operators Group

Medicine Hat Field Centre
- Grassland Naturalists
- Shallow Gas Management Association
- Urban Environment and Recreation Advisory Board

Red Deer Field Centre
- Butte Advisory Committee
- Calumet Synergy Group
- Eagle Valley Community Advisory Group
- Harmattan Elkton Community Advisory Committee
- Olds Community Advisory Group
- Panther Advisory Group (PAG)
- Parkland Airshed Management Zone (PAMZ)
- Sundre Petroleum Operators Group (SPOG)
- Sunchild/Ochiese Mutual Aid Group (SOMAG)
- West Central Stakeholders Group

Drayton Valley Field Centre
- Edson Creative Solutions
- Forest Resources Advisory Group (FRAG)
- Genesee Synergy Group
- Pembina Area Natural Resources Advisory Committee (PANRAC)
- Rider Pembina Advisory Committee
- West Central Air Shed Society

Midnapore Field Centre
- Cochrane Pipeline Operators Committee
- Indus Community / Petroleum Industry Association
- Quirk Creek Gas Processing Community Committee
- Southwest Alberta Sustainable Community Initiative (SASCI)
- Vulcan County Synergy Group
- Wheatland Surface Rights Group

St. Albert Field Centre
- Alberta Industrial Heartland Association
- Battle Lake Synergy Group
- East Parkland Liaison Committee (EPLC)
- Edmonton Area Pipeline Utilities Operators Committee (EAPUOC)
- Fort Assiniboine / CBM Synergy Group
- Northeast Central Industrial Association
- Pipeline Alley Committee
- Rimbey and Area Multi-Stakeholders Group
- St. Albert & Area Multi-Stakeholder Project (STAMP)
- Strathcona Neighbour Advisory Panel (SNAP)
- Transportation & Utility Corridor
- Watelet Public/Industry
- Western Canada Cavern Operators Group

Wainwright Field Centre
- Hardisty Terminal Complex Committee

1.6.2 Facilitation Efforts

Industry has a responsibility to discuss proposed development projects with citizens in the project area and identify and address concerns. When issues or concerns arise that have not been resolved satisfactorily, EUB staff are available to provide guidance and assistance to both parties to

- identify concerns regarding the proposed development,
- assist the public in understanding what the EUB requirements of industry are,

- facilitate the discussion of possible solutions,
- assist the public in understanding the EUB's mandate, and
- ensure understanding of the EUB's Appropriate Dispute Resolution (ADR) program and hearing process, which are available to both parties.

Staff were involved in 167 facilitations in 2004, of which 131 were completed, 114 were successfully resolved, and 36 were carried over to 2005. This compares to 169 facilitations in 2003, of which 127 were completed and 94 were successfully resolved.

Numerous presentations, meetings, and workshops have taken place to improve stakeholder understanding of the ADR process, which continues to prove very effective in assisting industry and the public in resolving issues.

EUB Action

- Analysis of the EUB's facilitation role was conducted in 2004 and it was determined that a specialized team be formed to effectively coordinate and conduct facilitations. This group is now part of the EUB's Applications Branch. In future, it will be reporting on the EUB's facilitation role in a separate document.

1.6.3 Industry/Community Open Houses

The EUB participated in 62 open houses in 2004 in an effort to answer questions, address issues, and improve the public's understanding related to proposed development. We support open houses as a way to improve communication and relationships with industry, the public, and government.

EUB Action

- In 2005, the EUB will focus on attending open houses to ensure awareness of the EUB's roles and responsibilities when proposed development could impact the community.

1.7 Major Initiatives

1.7.1 Field Inspection System

The full implementation of the computerized FIS has started to improve the accuracy of information related to notifications, inspections, and incidents. FIS has also improved the efficiency of Field Surveillance staff by enabling an increased number of inspections.

1.7.2 Emergency Response Plans

The requirements for emergency preparedness and response have been compiled into *Guide 71*. It is the responsibility of each licensee to determine the size of a project's emergency planning zone (EPZ), identify any surface developments within the EPZ, and determine whether an emergency response plan (ERP) is required.

As part of the inspection process, field staff determine if the licensee has an approved ERP on site. In addition, staff contact residents within the ERP to ensure that the licensee has reviewed the plan with them.

EUB Action

- An ERP audit protocol for assessing a licensee's capability of implementing its ERPs will be finalized in 2005.

1.7.3 Annual Joint Information Session

In 2004, the EUB, Sustainable Resource Development, Alberta Environment, and Natural Resources Conservation Board staff from around the province participated in five workshops to improve the understanding of the roles and responsibilities of each group and identify ways to improve working relationships at the field level. These sessions have improved staff knowledge and understanding of their respective roles and identified where roles overlap.

EUB Action

- The need for future joint information sessions will be determined in 2005.

2 Drilling and Servicing

Crew working on rig floor at drilling rig

2.1 Introduction

The EUB is responsible for regulating drilling and servicing operations to ensure public safety, conservation of resources, and protection of the environment. This responsibility is accomplished through existing regulations and requirements, which include conducting inspections, monitoring licensee and contractor performance, evaluating incidents, and applying fair and firm enforcement action in cases of noncompliance.

Drilling and servicing in Alberta over the last five years have been extremely active, with over 75 000 wells drilled. This has resulted in many challenges for both industry and the EUB, with the focus on the drilling and servicing of wells safely, with minimal impact on the environment and the public.

2.2 Well Control Occurrences

The well control data collected assist staff in monitoring industry performance and identifying when changes to regulations, inspection procedures, or operating practices are required.

Kicks,[5] blowouts,[6] and industry's response to these incidents continue to be the primary indicators of industry's drilling, servicing, and operating performance.

Industry's continued commitment to high training standards for rig personnel in well control and crew training has helped keep well control occurrences to a minimum. These will continue to be high-priority inspection areas.

2.2.1 Drilling—Blowouts/Kicks

In 2004, four blowouts occurred during the drilling of 18 572 wells (see Table 4). All four of these blowouts occurred during the drilling of surface hole and were freshwater artesian flows. There was no significant impact on the public or the environment.

Table 4. Drilling, servicing, and other[7] well control occurrences, 2004

	Drilling	Servicing	Other
Blowouts	4	4	15
Kicks	94	N/A	N/A

There were 94 kicks recorded in 2004, which equates to a kick occurrence rate of about 5 kicks per 1000 wells drilled. This rate has remained constant for the past five years and is a significant improvement over the years prior to 1998, when the kick occurrence rate was about 23 kicks per 1000 wells drilled.

2.2.2 Servicing—Blowouts

In 2004, there were four blowouts during servicing operations. Two of the blowouts occurred on sour wells, while the other two were on sweet wells. Two of the four blowouts are attributed to equipment failure and one to operator error; the other is under investigation. While three of the blowouts were of short duration (two days or less), the remaining blowout lasted 30 days and required the drilling of a relief well to bring it under control. This sour blowout occurred adjacent to a populated centre and impacted both the public and the environment.

EUB Action

- The EUB is conducting an extensive investigation into the cause of this blowout. This investigation will be completed in 2005.

2.2.3 Other—Blowouts

The EUB has expanded the review of blowouts to include the category "other" in this section of the report. The EUB has amalgamated blowout information into one section of the Field Surveillance summary for better clarity and understanding of blowouts in

[5] Kick—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.

[6] Blowout—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 flowing from one formation to another formation(s) (underground blowout) that cannot be controlled by increasing the fluid density. Control can only be regained by installing additional surface equipment and/or replacing existing equipment to allow shut-in or to permit the circulation of control fluids or by drilling a relief well.

[7] Other –Blowouts that occur at wells not related to a drilling or servicing operation. They include casing failures, wellhead equipment failures, and third-party damage (wellhead strikes, vandalism, etc.).

Alberta. These incidents were previously reported in the Environment Section under releases.

In 2004, fifteen blowouts in the "other" category occurred (see Table 4). One blowout was sour and fourteen were sweet. Eight of these blowouts are attributed to third-party damage with some type of vehicle, construction, or farm implement striking a well. Three were the result of equipment failure, and the remaining four were caused by casing failures at enhanced recovery operations in northeast Alberta. All blowouts were of short duration (less than two days) and had minimal environmental impact.

Table 5 summarizes the number of blowouts that occurred over the past five years by category.

Table 5. Blowouts by category, 2000-2004

	Drilling	Servicing	Other	Total
2000	4	4	11	19
2001	2	6	3	11
2002	6	5	6	17
2003	1	4	16	21
2004	4	4	15	23

EUB Action

- The EUB investigates the causes of all blowouts, which assists staff to identify when changes to equipment, procedures, or regulations are required to continually improve industry standards.

2.3 Drilling—Activity Level and Inspections

2004 was a record year for wells drilled in Alberta, as 18 572 wells were drilled.[8] This compares to the 17 108 wells drilled in 2003 (see Table 6) and represents an 8.6 per cent increase.

Table 6. EUB drilling inspection results and activity

	2000/01	2001/02	2002	2003	2004
Wells drilled	14 621	14 307	13 193	17 108	18 572
Drilling rigs inspected	648	499	433	400	528
% inspected	4.4	3.5	3.3	2.3	2.8
% satisfactory	87.7	89.7	89.6	88.5	84.5
% unsatisfactory (minor, major, And serious)	12.3	10.3	10.4	11.5	15.5

2.3.1 Inspections

The EUB prioritizes drilling rig inspections based on the weighting of three key criteria: *operator* (licensee/contractor) performance, site *sensitivity*, and *inherent* risk (OSI; see Section 1.3). Staff apply consistent enforcement action for noncompliance to increase industry awareness and accountability.

[8] For the purpose of this report, drilling activity includes spuds (new well starts) and re-entries into existing wells.

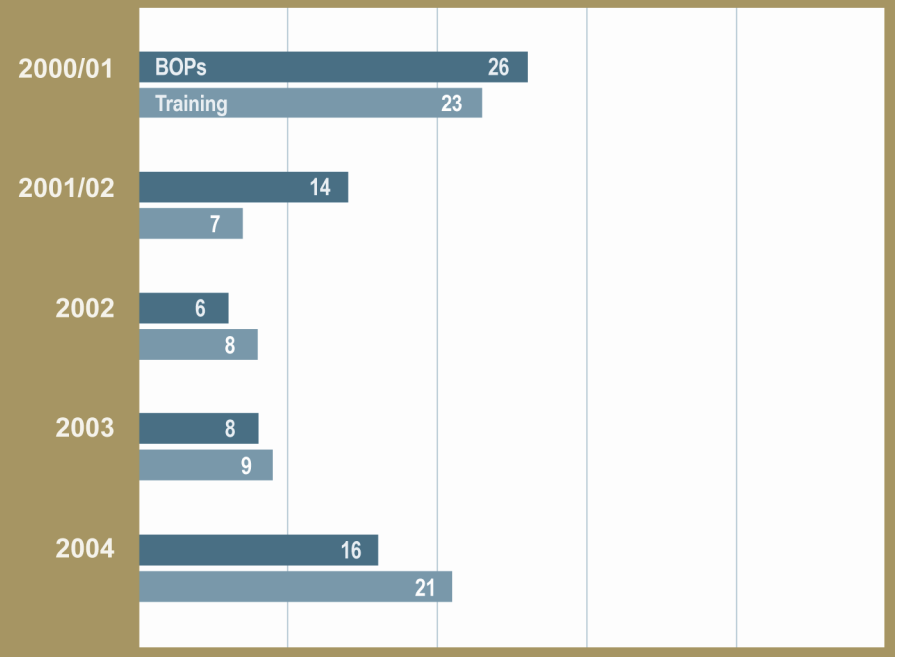
During 2004, staff conducted 528 inspections on drilling operations, resulting in 446 satisfactory inspections and 82 unsatisfactory inspections. All unsatisfactory items were brought into compliance (see Table 6).

The EUB inspects all critical sour wells at least once prior to drilling into the critical zone. Of the 528 inspections, 65 critical sour well drilling inspections were conducted, resulting in 58 satisfactory inspections (89.3 per cent) and 7 unsatisfactory inspections (10.7 per cent). Of these 7, there were 5 minor unsatisfactory inspections, 2 major unsatisfactory inspections, and no serious unsatisfactory inspections. All unsatisfactory items were brought into compliance. This compares to the previous year's results, when there were 46 critical sour well drilling inspections completed and all were satisfactory.

2.3.2 Minor, Major, and Serious Unsatisfactory Items

Of the 82 unsatisfactory inspections recorded in 2004, there were 56 minor unsatisfactory inspections, 25 major unsatisfactory inspections, and 1 serious unsatisfactory inspection. The 26 major/serious unsatisfactory inspections resulted in 38 major/serious unsatisfactory items being recorded (see Section 1.3 for definitions of satisfactory inspection and minor, major, and serious unsatisfactory inspections). Operational failures of the BOP/accumulator systems resulted in 16 of the major unsatisfactory items, while deficiencies in crew training accounted for 21 major unsatisfactory items (see Figure 6).

Figure 6. Major deficiencies on drilling rigs—number of occurrences



This compares to 2003, when there were 46 unsatisfactory inspections, of which 30 were minor unsatisfactory inspections, 14 major unsatisfactory inspections, and 2 serious unsatisfactory inspections.

Drilling operations were suspended at 25 rigs with major and serious unsatisfactory items until the deficiencies were corrected. The total time the 25 rigs were shut down was about 97 hours. This compares to 2003, when 11 rig shutdowns totalled 117 hours.

EUB Action

- The EUB is concerned about the increased number of unsatisfactory inspections and will continue to monitor and adjust its drilling inspection levels to ensure industry compliance. In addition, the EUB will focus on conducting operator awareness sessions to increase industry's understanding of requirements.

2.4 Servicing—Activity Level and Inspections

2004 was another busy year for well servicing activity in Alberta. This was due in part to the record number of wells drilled during the year.

2.4.1 Inspections

Staff conducted 333 inspections on well servicing operations, resulting in 293 satisfactory inspections and 40 unsatisfactory inspections. All unsatisfactory items were brought into compliance. This compares to 2003, when 21 inspections were recorded as unsatisfactory (see Table 7).

Table 7. EUB servicing inspection results

	2000/01	2001/02	2002	2003	2004
Service rigs inspected	348	262	238	223	333
% satisfactory	87.1	90.5	93.7	90.5	88.0
% unsatisfactory (minor, major, and serious)	12.9	9.5	6.3	9.5	12.0

2.4.2 Minor, Major, and Serious Unsatisfactory Items

Of the 40 unsatisfactory inspections, there were 31 minor unsatisfactory inspections and 9 major unsatisfactory inspections. This compares to 2003, when 19 minor unsatisfactory inspections and 2 major unsatisfactory inspections were recorded. There were no serious unsatisfactory inspections noted in 2003 or 2004.

The 9 major unsatisfactory inspections resulted in 17 major unsatisfactory items. Operational failure of the BOP/accumulator systems resulted in 15 of the major unsatisfactory items, while deficiencies in crew training accounted for 2 major unsatisfactory items (see Figure 7).

Servicing operations were suspended at 9 service rigs with major unsatisfactory items until the deficiencies were corrected. The total shutdown time was about 31 hours. This compares to 2003, when 2 rigs were shut down for a total of 12 hours.

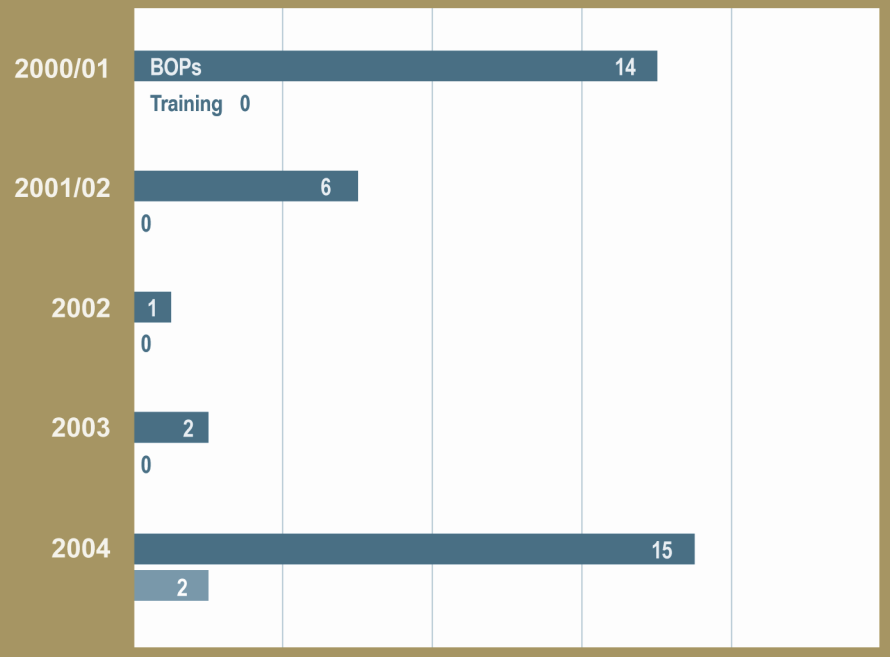
EUB Action

- The EUB is concerned about the increase in the number of unsatisfactory inspections and will continue to monitor and adjust its servicing inspection levels to ensure industry compliance.

2.5 Public Complaints—Drilling and Servicing

In 2004, staff investigated 80 public complaints related to the drilling and servicing of wells. The cause of the complaints included such issues as noise, odours, property damage, flaring, and dust created by drilling and service rig traffic. This compares to 2003, when 48 public complaints were received about similar issues.
The EUB immediately investigates all public complaints in Alberta and ensures that appropriate action is taken. Public complaints remain a priority.

Figure 7. Major deficiencies on service rigs—number of occurrences



2.6 Inspection Manual Reviews—Drilling and Servicing

Directive 36: Drilling Blowout Prevention Requirements and Procedures was released on July 5, 2004, and replaces *Guide 36: Drilling Rig Inspection Manual*.

3 Oil Production

EUB air monitoring unit at well site

3.1 Introduction

Field staff focus on identifying potential hazards that may affect the public or the environment. This is done by inspecting oil production facilities to ensure compliance with requirements.

A significant amount of time is spent conducting licensee awareness sessions to increase industry's understanding of EUB requirements and the consequences for noncompliance. During 2004, these sessions were conducted on both an individual and a group licensee basis and included the review of EUB *Guide 64: Facilities Inspection Manual*, *Guide 60: Upstream Petroleum Industry Flaring Guide,* and *IL 99-4: EUB Enforcement Process.*

3.2 Inventory, Activity Level, and Inspections

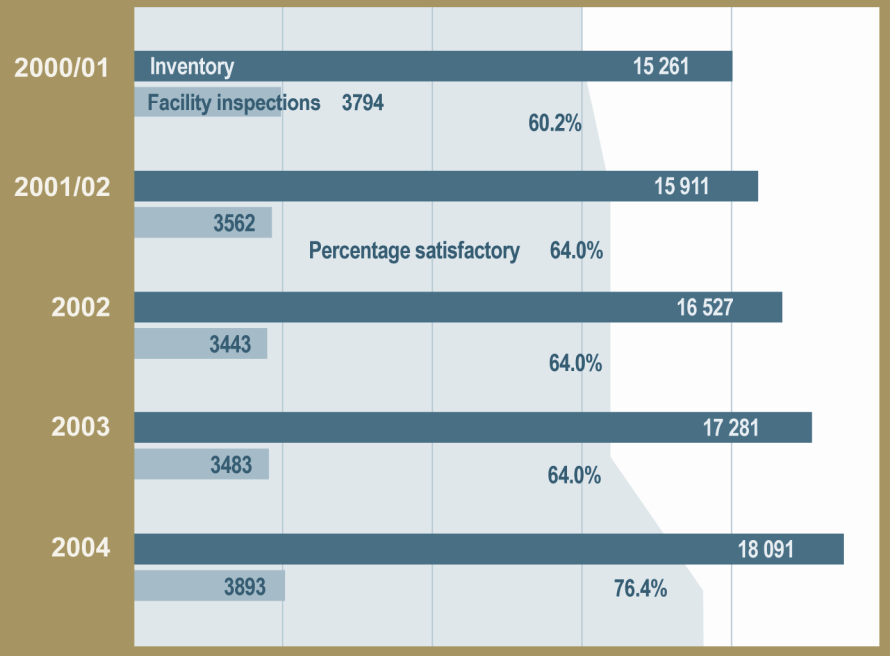
The inventory of conventional oil and crude bitumen facilities has increased from previous years. As of the end of 2004 it was

- sweet multiwell batteries 1642
- sour multiwell batteries 833
- sweet single-well batteries 9958
- sour single-well batteries 1499

- sweet satellites 2069
- sour satellites 2090

Figure 8 shows the inventory of oil facilities, the number of inspections, and the percentage found to be satisfactory since 2000/2001 (see Section 1.3 for definitions of satisfactory inspection and minor, major, and serious unsatisfactory inspections). Of the 3893 inspections conducted in 2004, there was a 76.4 per cent satisfactory inspection rate, an improvement from previous years. Of the 23.6 per cent unsatisfactory inspections, 22.4 per cent were minor unsatisfactory inspections.

Figure 8. Oil production—inventory, facility inspections, and percentage satisfactory



Using the OSI[9] priority inspection process, staff conducted 3893 facility inspections in 2004. This compares to the previous year, when 3483 inspections were conducted.

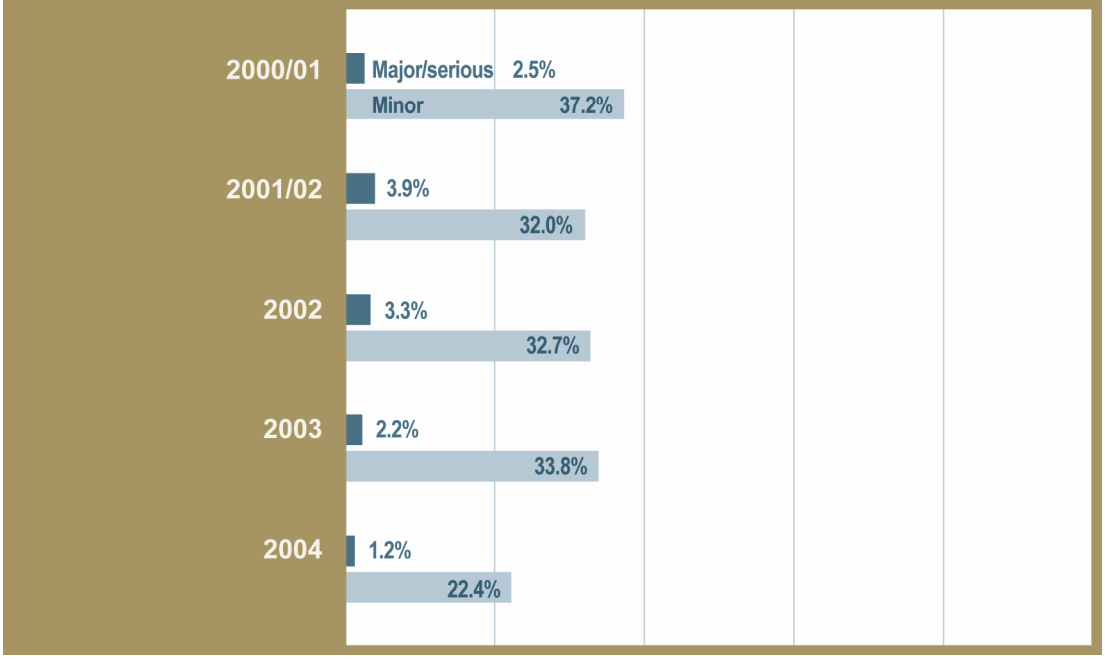
There were 45 major unsatisfactory inspections and no serious unsatisfactory inspections in 2004. As a result, 22 oil production facilities were suspended (see Table 2, on page 6) and appropriate enforcement action was taken on all facilities to bring them into compliance. This compares to 77 major and 1 serious unsatisfactory inspection identified in 2003.

The decrease in the unsatisfactory inspection percentages may be attributed in part to industry's increased understanding of EUB requirements and by proactively identifying issues and ensuring compliance.

[9] As stated in Section 1.3, the EUB conducts inspections based on priority selection criteria that include *operator* (licensee/contractor) performance history, site *sensitivity*, and *inherent* risk of the operation (OSI).

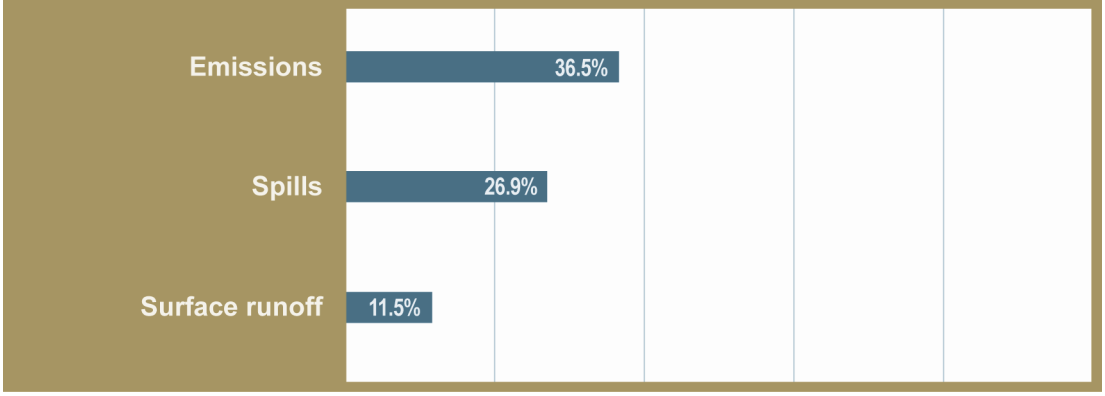
Figure 9 shows the percentage of facility inspections with major/serious and minor unsatisfactory inspections since 2000/2001.

Figure 9. Oil production facility inspections with major/serious and minor unsatisfactory inspection items, by percentage of total inspections



The three most common major unsatisfactory inspection items found in 2004 are shown in Figure 10.

Figure 10. Oil production facilities' three most common major unsatisfactory inspection items, 2004



The most common major unsatisfactory inspection items were

- equipment failure resulting in H_2S emissions off lease,
- licensee not appropriately cleaning up spills, and
- soil sterilants migrating off lease and surface runoff release criteria in *Guide 55: Storage Requirements for the Upstream Petroleum Industry* and *Guide 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry* not met.

All noncompliant inspections were dealt with in accordance with *IL 99-4*. The EUB will continue to meet with licensees to discuss inspection results, focusing on identifying the most common unsatisfactory items and finding solutions to improve compliance.

EUB Action

- In 2005, the EUB will continue to conduct inspections on sour facilities with site-specific emergency response plans. As part of the inspections, residents are contacted to ensure that they are aware of the requirements of the emergency plan. These residents are also provided with the results of the facility inspection.

In 2004, of the 3893 inspections completed, 872 (22.4 per cent) were classified as minor unsatisfactory inspections. All unsatisfactory inspections were brought into compliance. This compares with 1177 minor unsatisfactory inspections (33.8 per cent) out of 3483 in 2003. The most common minor unsatisfactory items found in 2004, shown in Figure 11, were

- housekeeping
  - garbage and debris not stored properly
  - oil-stained areas on lease not cleaned up
- measurement
  - gas meter calibration expired
  - oil meter calibration expired
- signage/security
  - no identification or warning signs posted
  - fencing not adequate

3.3 Public Complaints

During 2004, there were 131 public complaints related to oil production facilities. This compares to 97 public complaints in 2003. Every complaint was investigated and appropriate enforcement was applied where there was noncompliance. There were 79 public complaints related to odours, flaring, and smoke, compared to 58 similar complaints in 2003 (see Figure 12).

Investigation of these complaints found that the most common causes of odours were

- vapour recovery units inadequate to handle stock tank vapours,
- thief hatches not sealing properly, and
- improper trucking practice when hauling sour fluids.

Figure 11. Oil production facilities' three most common minor unsatisfactory inspection items, 2004

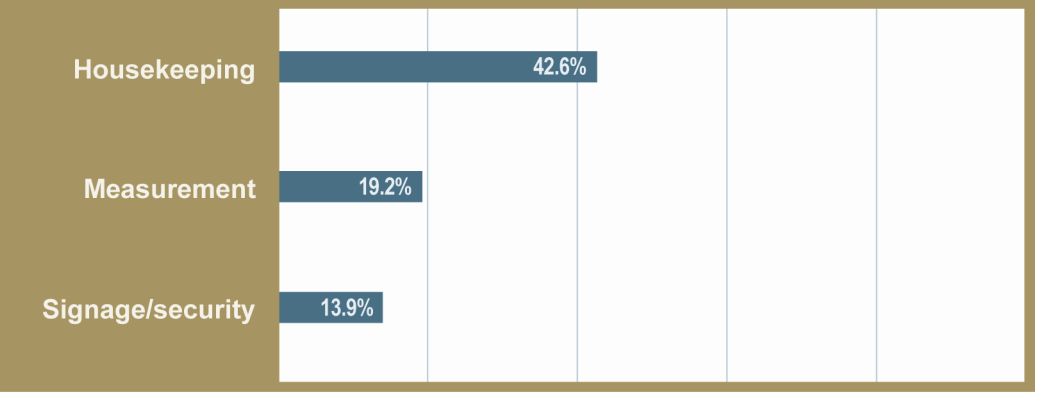
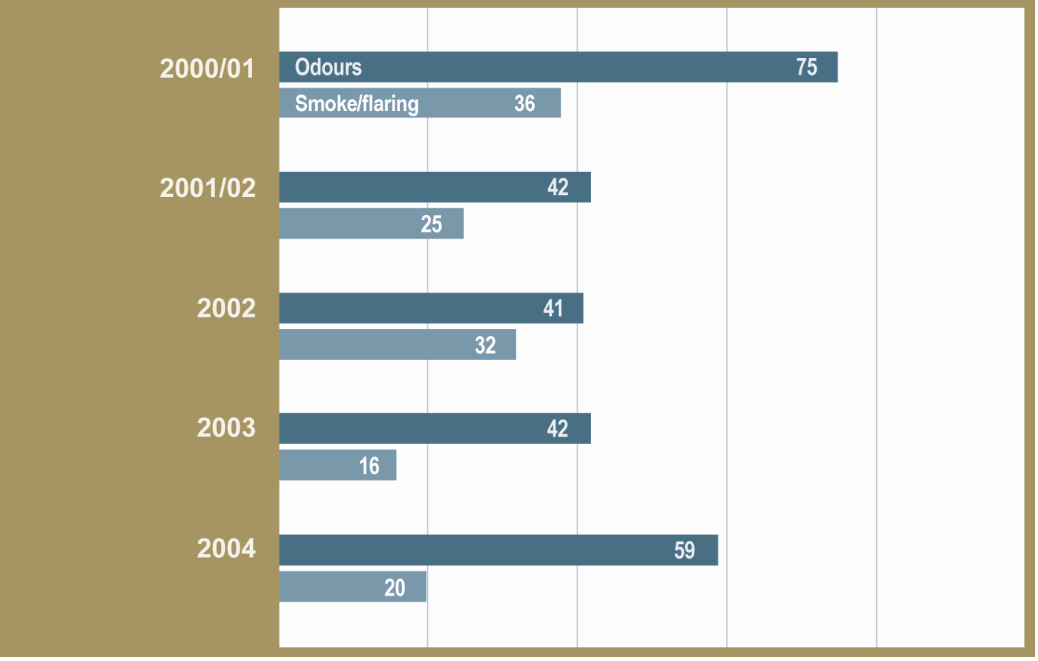


Figure 12. Oil production facilities—odour and smoke/flaring complaints



The most common causes of flaring and smoke were

- incomplete combustion of solution gas, and
- solution gas flaring associated with planned and emergency shutdowns.

The EUB requires licensees to investigate all sources of emissions and install equipment or use other technology to reduce emissions. In addition, licensees are required to closely monitor operations and improve communications with area residents.

The public complaint history of each oil production facility is reviewed to determine if there have been repeat complaints. If there have been, field staff take additional action as necessary to achieve lasting improvement.

During 2004, staff identified 11 oil facilities as having repeat complaints. These were related to odours, flaring, smoke, noise, spills, and lease management. Repairs and facility upgrades were made by the licensees to remedy the problems. This compares to 8 oil facilities having repeat complaints in 2003.

Staff held a number of operator awareness sessions throughout the province for licensees in sour areas. The objective is for industry to investigate and develop best operating practices to minimize off-lease emissions, thus reducing the impact on the public and the environment.

EUB Action

- To reduce the potential for public complaints, the EUB has increased the inspection frequency at sour facilities that have had major or serious unsatisfactory inspections. The increased inspections will continue, and the results will be reported as part of our overall facility inspection statistics.
- We will continue to conduct group licensee awareness sessions in an effort to reduce public and environmental impacts.

3.4 Licensees with High Minor Unsatisfactory Inspection Rates

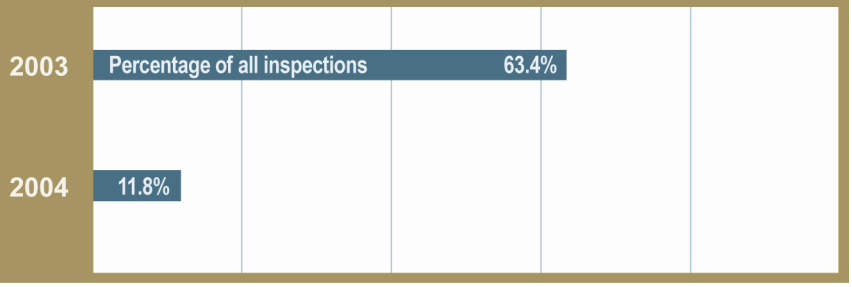
The process to identify licensees with a minor unsatisfactory inspection rate above the industry average is described in *IL 99-4*. The EUB identified three licensees that had a high minor unsatisfactory inspection rate greater than 50 per cent in 2003. Staff met with each licensee to review its inspection record, developed an action plan to address the high minor unsatisfactory rate, and outlined the consequences that would occur if the inspection record did not show improvement.

The three licensees had a combined total of 41 initial inspections in 2003. Minor unsatisfactory inspections were found at 26 oil production facilities, resulting in a 63.4 per cent unsatisfactory rate. After reviewing the inspection records with each of the licensees, 17 additional inspections were conducted between July 1 and December 31, 2004. Minor unsatisfactory inspections were identified at two facilities, resulting in an 11.8 per cent unsatisfactory rate (see Figure 13).

Measures taken by these licensees to improve their compliance rate included

- conducting independent third-party inspections and self-audits and taking corrective action,
- conducting meetings with trucking firms to inform them of the necessity of maintaining a clean operation, and
- conducting meetings with licensee personnel and contract operators to ensure that they are aware of EUB requirements.

Figure 13. Oil production facilities—minor unsatisfactory inspections for three target licensees, 2004



EUB Action

- Staff will continue to meet with licensees with high minor unsatisfactory inspection rates to ensure that procedures are implemented to improve their compliance record.

4 Gas Production

Gas well installation

4.1 Introduction

Field staff respond to incidents and ensure that the proper resources are being implemented to remediate and minimize potential risks to the public and environment.

In 2004, we focused inspections on licensed facilities that included gas plants and compressors. The inspectors reviewed available records, such as licensing and/or approvals, inspection, complaint, and release history, waste manifests, flaring records, sulphur balance reports, and various volumetric production data, to gain an understanding of what is happening in and around the facility.

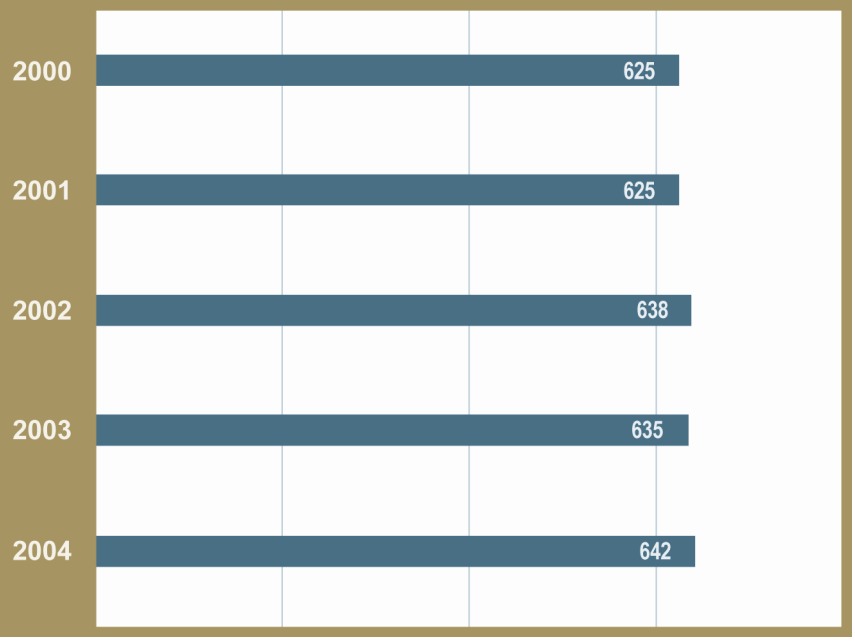
4.2 Inventory, Activity Level, and Inspections

The inventory of gas facilities as of the end of 2004 was

- gas batteries 2538
- sweet gas plants 529
- sour gas plants 275
- compressor stations 4372

Figure 14 shows the number of gas plants over the past five years. The difference between the gas plant inventory numbers and the operating gas plant numbers is due to factors such as plants approved but not constructed and plants not operating.

Figure 14. Number of active gas plants



In 2004, 2864 gas facility inspections were completed, including 13 detailed operational inspections. This was an increase of 62 per cent compared to 2003, when 1766 inspections were conducted.

As shown in Figure 15, in 2004 the satisfactory inspection rate for gas plants and gas batteries increased (see Section 1.3 for definitions of satisfactory inspection and minor, major, and serious unsatisfactory inspections). In addition, the compressor station satisfactory inspection rate was 72.9 per cent.

The number of major unsatisfactory inspections at facilities continued to decrease during 2004, down to 0.8 per cent, compared to 1.6 per cent in 2003 (see Figure 16). The minor unsatisfactory inspection rate for 2004 also decreased, down to 24.8 per cent, compared to 31.5 per cent in 2003. No serious unsatisfactory inspections were conducted in 2004.

The decrease in the unsatisfactory inspection percentages can be attributed to industry's increased understanding of EUB requirements and by proactively identifying issues and ensuring compliance.

All noncompliance items were dealt with in accordance with *IL 99-4: EUB Enforcement Process*. The EUB will continue to meet with licensees to discuss inspection results, focusing on identifying the most common unsatisfactory items and finding solutions to improve compliance.

Figure 15. Gas production facilities—percentage of satisfactory inspections

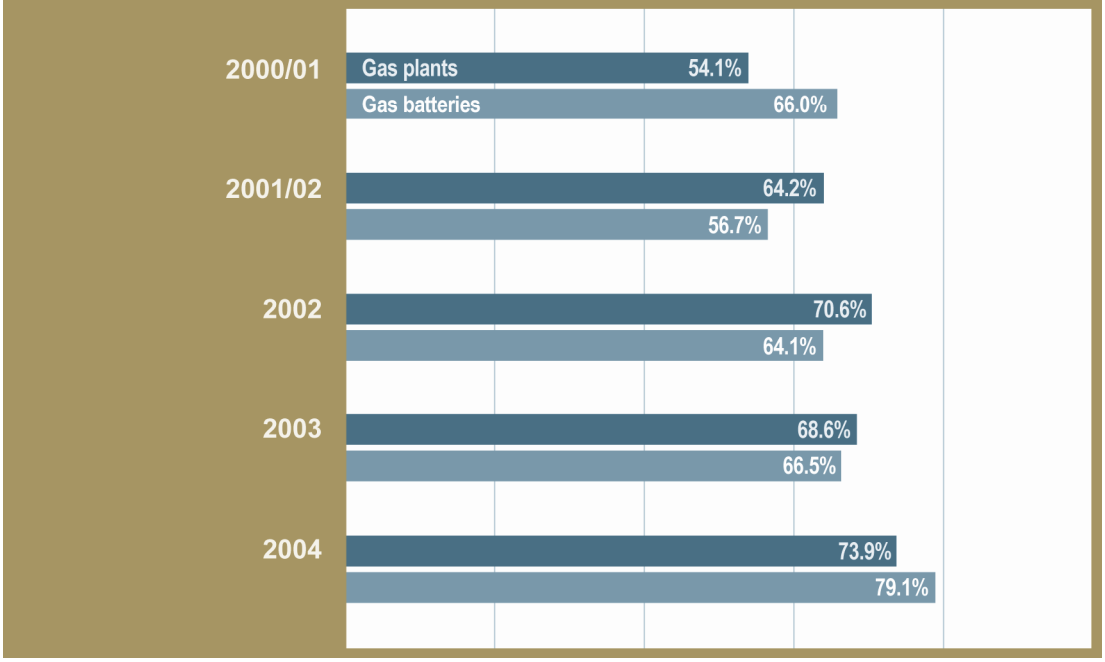
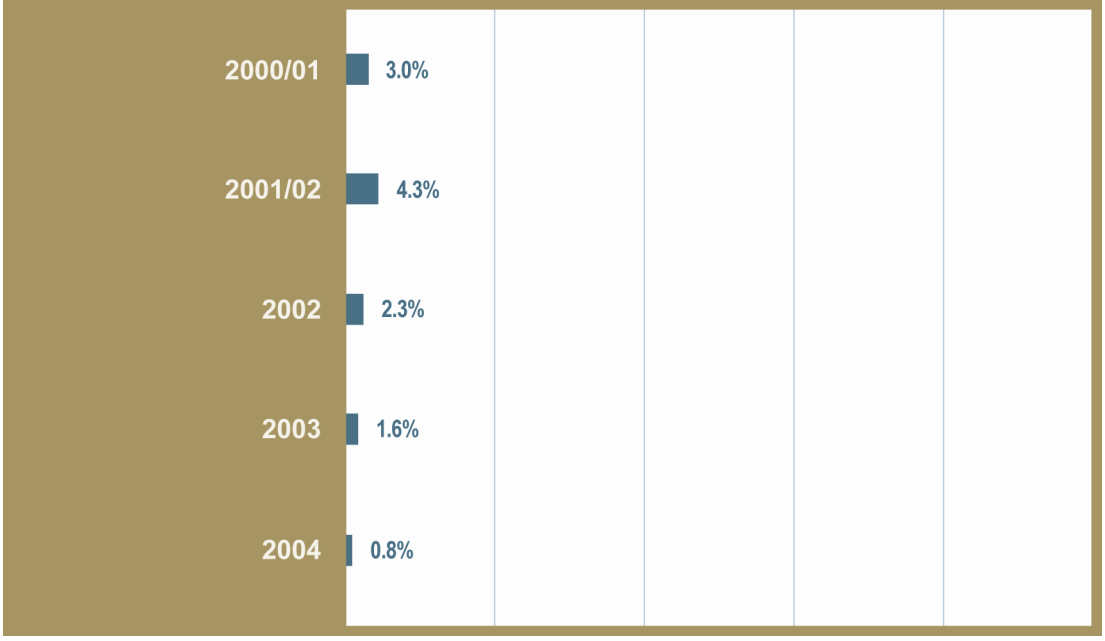


Figure 16. Gas production facilities—percentage of major unsatisfactory inspections



The most common major unsatisfactory inspection items in 2004 were

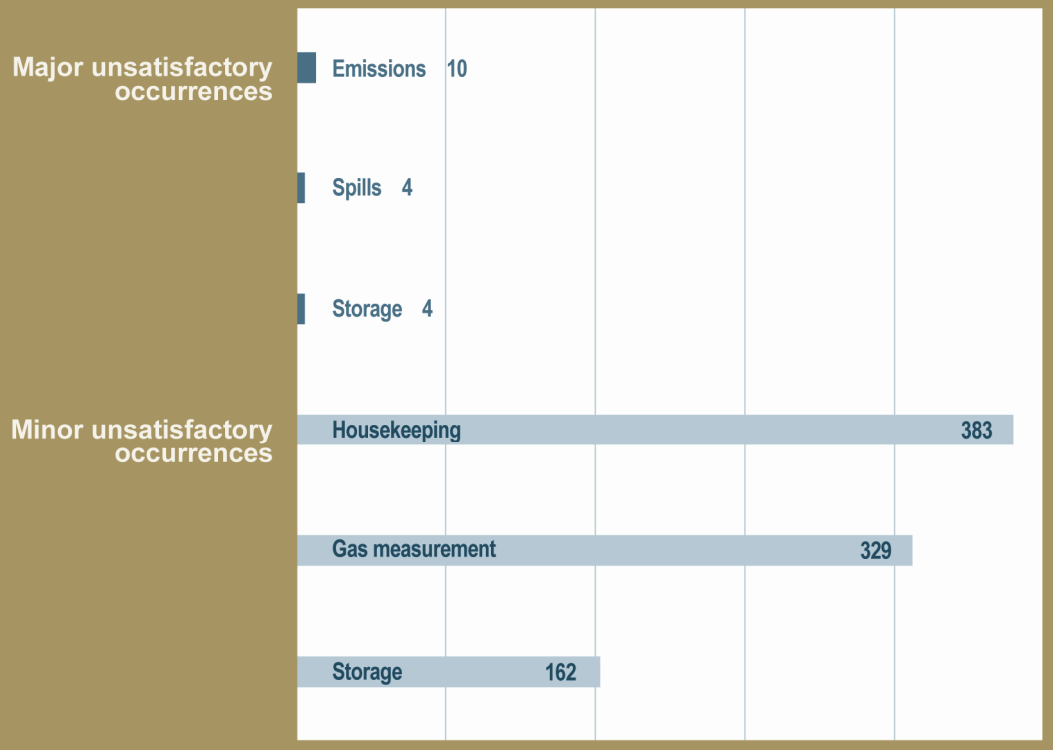
- H_2S emissions off lease,
- spills not cleaned up properly, and
- storage tank dike not in place.

The most common minor unsatisfactory inspection items in 2004 were

- poor housekeeping practices,
- gas measurement problems, and
- storage issues.

Figure 17 shows the most common major and minor unsatisfactory inspections items in 2004.

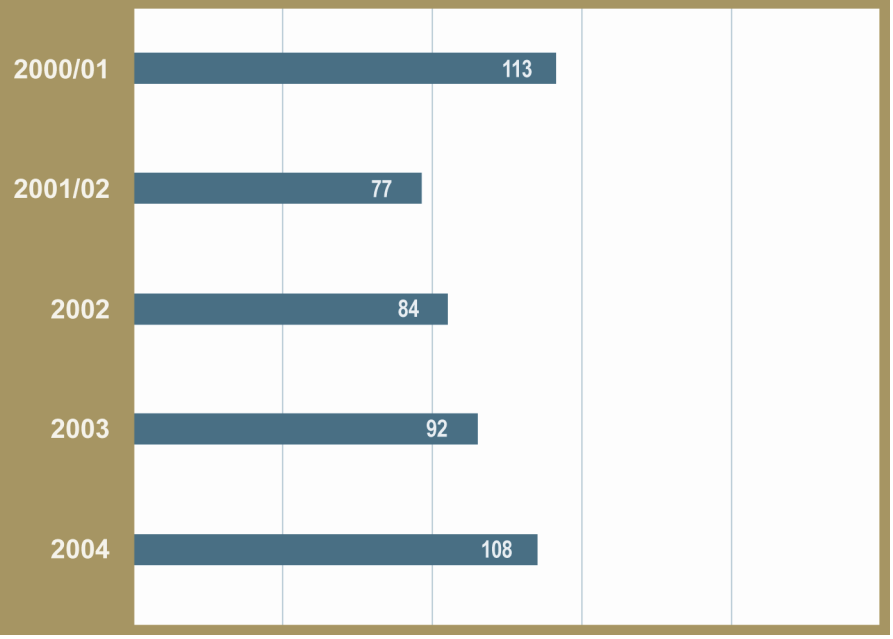
Figure 17. Gas production facilities' most common major and minor unsatisfactory inspection items, 2004



4.3 Public Complaints

The number of public complaints from gas facilities (gas plants and compressors) increased by 17.4 per cent to 108 in 2004 from 92 in 2003 (see Figure 18). In addition, 69 complaints were directed at gas well installations, a decrease of 41.5 per cent compared to 118 complaints in 2003.

Figure 18. Gas production facilities (gas plants/compressor stations)—total complaints



In 2004, the most common concerns at gas facilities were

- operational impact (e.g., noise, dust, traffic),
- odours (e.g., hydrocarbon, H_2S), and
- physical impact (e.g., housekeeping, weeds, erosion, contamination).

In 2004, field staff identified 23 gas facilities as having repeat complaints. These were related to odours, flaring, smoke, noise, spills, and lease management. The EUB investigated all complaints and ensured that remedial action occurred.

In 2004, the EUB conducted 8 sour operator awareness sessions. The objective is for industry to investigate and develop best operating practices to minimize off-lease omissions, thus reducing the impact on the public and the environment.

EUB Action

- The EUB is currently revising *Guide 60*, which addresses a broad range of flaring and venting issues in Alberta. Inspections and audits of well test flaring operations will continue to be a priority. EUB field staff will focus on flaring operations in populated areas and those wells flaring more than 5 per cent H_2S.
- The EUB will continue to conduct operator awareness sessions in an effort to reduce public and environmental impacts.

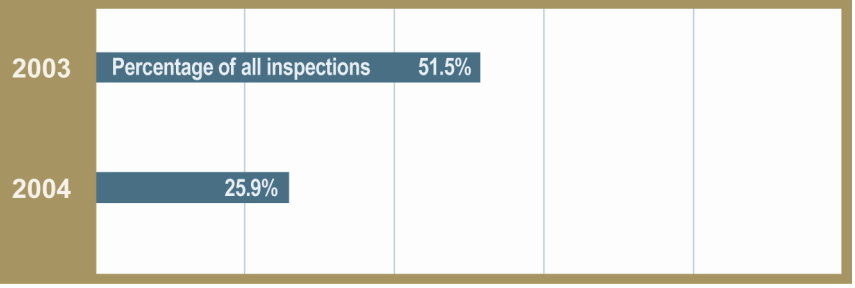
4.4 Licensees with High Minor Unsatisfactory Inspection Rates

The process to identify licensees with a minor unsatisfactory inspection rate above the industry average is described in *IL 99-4: EUB Enforcement Process*. The EUB identified three licensees that had a minor unsatisfactory inspection rate equal to or greater than 50

per cent in 2003. Field staff met with each licensee to review its inspection record, developed an action plan to address the high minor unsatisfactory rate, and outlined the escalating enforcement consequences that would occur if its inspection record did not show improvement.

The three licensees had a combined total of 68 initial inspections in 2003. There were 35 gas facilities that had minor unsatisfactory noncompliance inspections, resulting in a 51.5 per cent unsatisfactory rate. After reviewing the inspection records with each of the licensees, 58 additional inspections were conducted from July 1 through December 31, 2004. A follow-up review was conducted, and the minor unsatisfactory rate improved to 25.9 per cent (see Figure 19). Further improvements are expected as these licensees continue to implement additional measures to ensure compliance.

Figure 19. Gas production facilities—minor unsatisfactory inspections for three target licensees



Measures taken by the licensees to improve their compliance rate included

- conducting independent third-party inspections and self-audits and taking corrective action, and
- conducting meetings with licensee personnel and contract operators to ensure that they are aware of EUB requirements.

EUB Action

- The EUB will continue to meet with licensees with high minor unsatisfactory inspection rates to ensure that procedures are implemented to improve their compliance record.

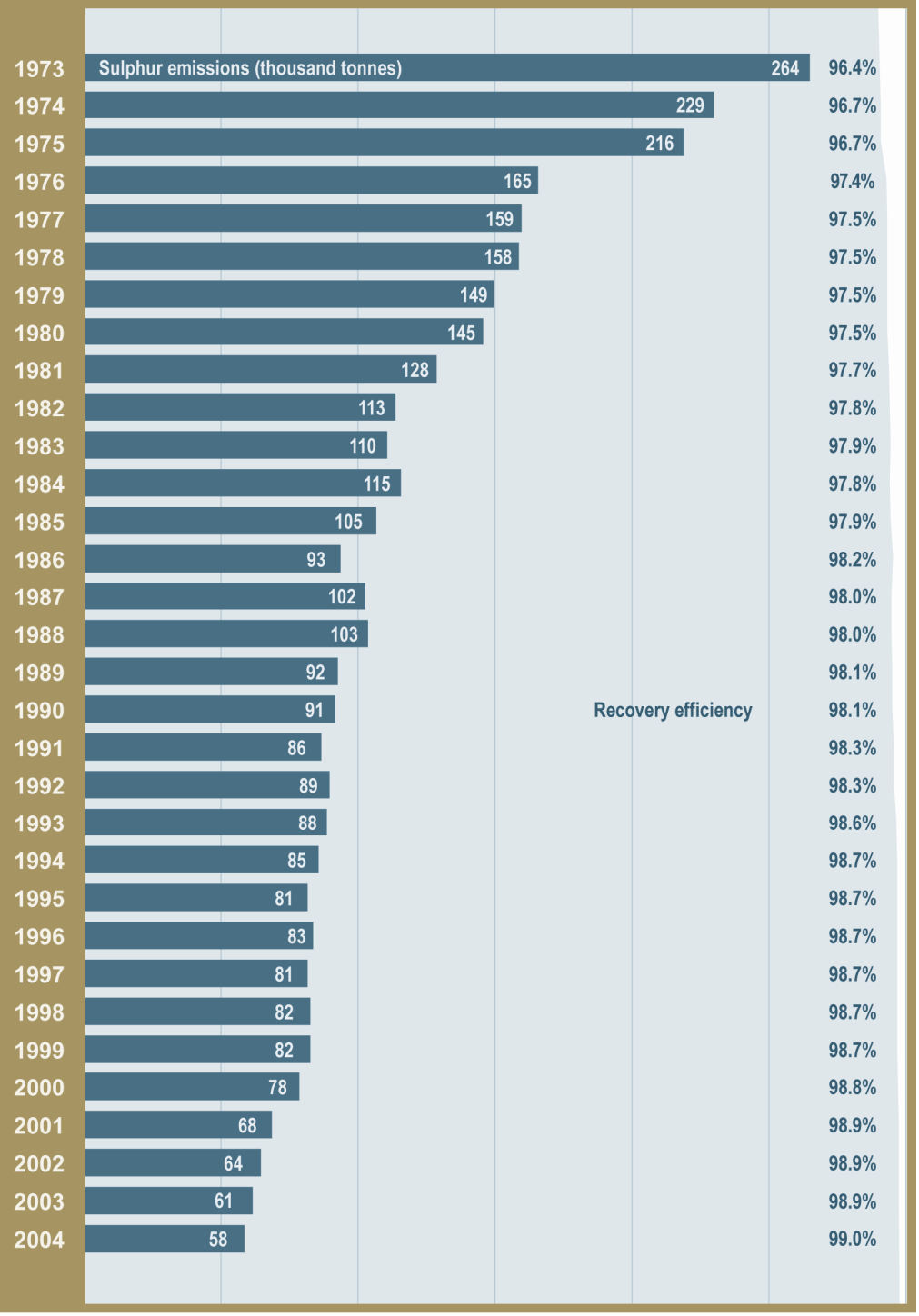
4.5 Sulphur Recovery

Sulphur recovery efficiencies at gas plants recovering salable sulphur is at 99.0 per cent. Overall, sulphur emissions have decreased by 26 per cent since 2000 (from 78 000 to 58 000 tonnes of sulphur emissions). This decrease is due to the declining sulphur inlets at these plants and the EUB/Alberta Environment *Interim Directive (ID) 2001-3: Sulphur Recovery Guidelines for the Province of Alberta*, which has resulted in improved performance (see Figure 20).

The sulphur recovery ID details the requirements when a plant has to be relicensed to meet the new sulphur recovery standards. In the last five years, a number of sour gas plants have been relicensed to meet the new standards. For some of these plants, it has meant the addition of significant new equipment. Details of these changes are in the annual EUB publication *Statistical Series (ST) 101: Sulphur Recovery and Sulphur*

Emissions at Alberta Sour Gas Plants. ST 101 allows licensees of plants with sulphur recovery to take immediate advantage of performance improvements to delay the full relicensing requirements.

Figure 20. Efficiency versus emissions of sulphur recovery plants



5 Pipeline

Pipeline being constructed near Wabasca, Alberta

5.1 Introduction

Licensees operating pipelines in Alberta are responsible for complying with all applicable standards and EUB regulations. Inspection processes are in place to monitor compliance and apply enforcement measures for noncompliance. (See Section 1.3 for additional information on the EUB's inspection criteria and for definitions of satisfactory inspection and minor, major, and serious unsatisfactory inspections.) When major or serious unsatisfactory inspection items are found, the pipeline is suspended until appropriate remedial action is taken (see Table 2, page 6).

Field staff focus their activities on four key inspection areas:

1) **Pipeline failures/hits—**The Alberta *Pipeline Act* requires licensees of pipelines to report any pipeline failures/hits to the EUB regardless of the cause, magnitude, or consequence. EUB field staff review the cause of the failure/hit to ensure that mitigative measures are taken to prevent similar occurrences in the future.

2) **Construction and pressure testing—**Staff conduct inspections on new pipeline installations to ensure compliance with the requirements.

3) **Operations inspections**—Staff conduct inspections on existing pipeline systems to ensure that licensees conduct operational and maintenance activities in accordance

with the requirements (maintenance of valves, cathodic protection systems, corrosion monitoring and control systems, right-of-way and warning signs, emergency contact numbers, etc.).

4) **Contact damage—**Staff inspect sites where pipeline contact damage has occurred. Awareness seminars are held for licensees and contractors to educate them on requirements that must be met prior to commencing ground disturbance activities to reduce incidents of pipeline hits, enhance public safety, and mitigate environmental impacts.

The length and type of pipelines in Alberta under EUB jurisdiction are listed in Table 8.

Table 8. Length of pipelines by type in Alberta under EUB jurisdiction (km)

Year	Crude oil	Natural gas	Sour gas	Water	Multiphase	Others	Total
Total prior to 1999	15 120	150 258	13 153	16 939	42 753	21 457	259 680
1999	1 086	9 541	1 574	605	1 510	1 725	16 041
2000	204	11 364	1 206	490	1 609	1 181	16 054
2001	408	12 539	1 504	773	2 389	1 164	18 777
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	2017	882	18 029
TOTAL	17 793	216 491	19 545	20 578	52 352	27 668	354 427

[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.

5.2 Pipeline Failures/Hits

A pipeline failure is defined as the failure of the pipeline to contain the substance being transported. For statistical purposes, pipeline hits are included in the pipeline failure numbers.

- A hit is defined as 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.

- A leak is defined as an opening, crack, or hole in a pipeline causing some product to be released, but not immediately impairing the operation of the pipeline.

- A rupture is defined as the instantaneous tearing or fracturing of the pipeline material, immediately impairing the operation of the pipeline.

The EUB's release reporting and inspection priority system applies to all pipeline releases and is defined as follows:

- Priority 1 releases are those that pose the most serious environmental and public impact. Field staff make every attempt to immediately respond to the location; however, when that is not possible, all attempts are made to have another regulatory agency respond for the initial assessment. In these cases, staff will conduct an inspection as soon as possible.

- Priority 2 releases are those where a significant volume has been released or the impact on the environment is a concern. They may include low-volume releases if the licensee is new or has a poor inspection history. These sites are generally inspected within 7 working days.

- Priority 3 releases are low-volume but may include medium-volume releases if the licensee has a satisfactory inspection history. In these cases, staff have a high degree of confidence that the release will be appropriately handled. Historically, about 25 per cent of priority 3 spills are inspected to ensure that they are satisfactorily addressed.

If a pipeline failure/hit occurs, the licensee or operating company is required to inform the local EUB Field Centre. Field staff record the information into a database, including date of occurrence, geographic location, pipeline specifications, operating conditions, environmental release information, cause, and priority rating of the release.

There were 13 ruptures in 2004, compared to 28 ruptures in 2003—a 54 per cent decrease. Table 9 shows the various causes of failures and corresponding inspections during 2004.

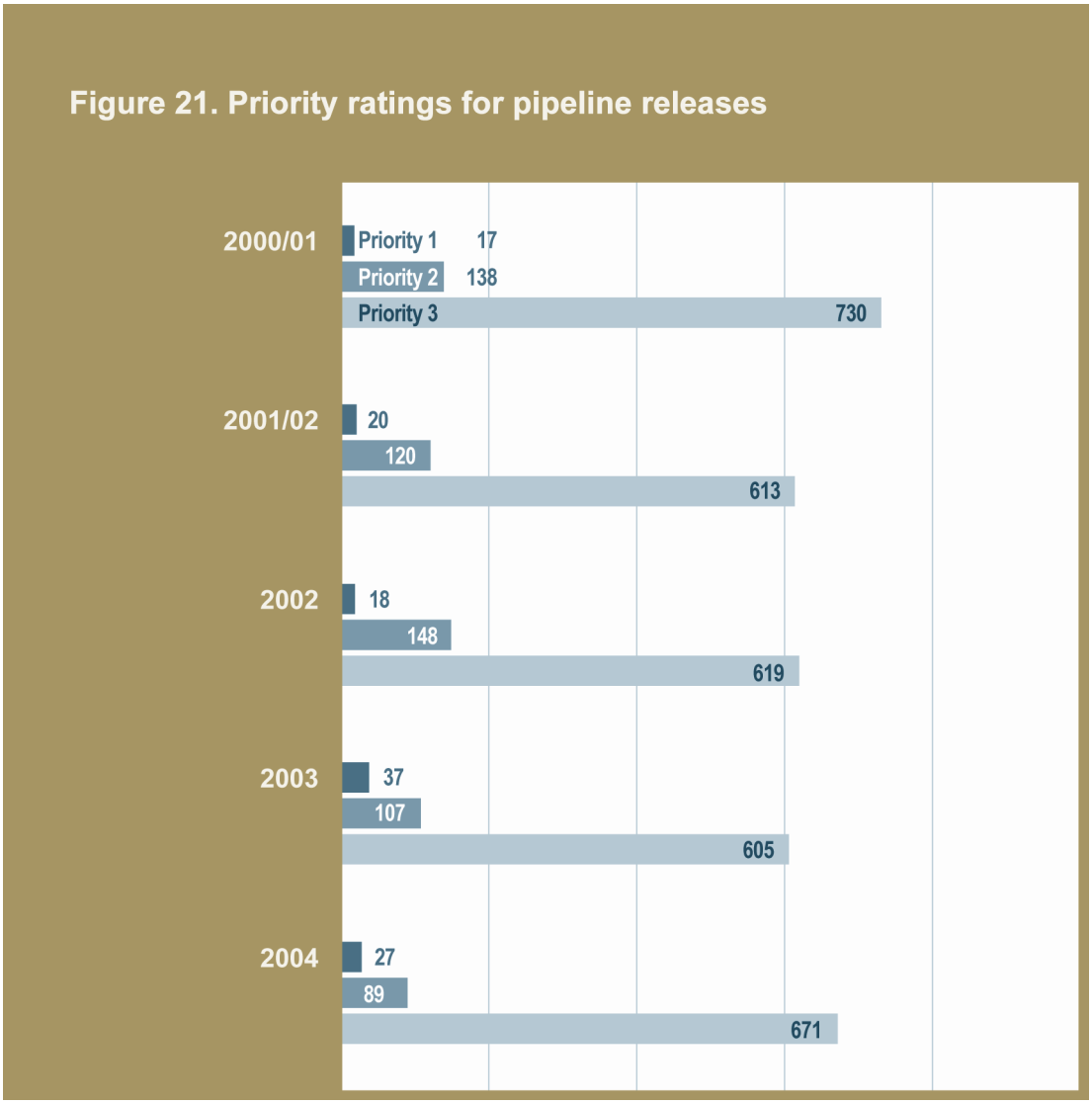
Table 9. Failures/hits reported from January 1 to December 31, 2004[1]

	Incidents		Leaks		Ruptures	
Cause	**#**	**%**	**#**	**Inspections**	**#**	**Inspections**
Construction damage	29	3.4	28	14	1	1
Damage by others (hits with release)	24	2.8	18	22	6	6
Damage by others (hits, no release)	60	7.1	0	12	0	0
Earth movement	12	1.4	11	7	1	1
External corrosion	122	14.4	121	51	1	1
Fittings/valve failure	31	3.6	30	14	1	1
Girth weld	10	1.2	10	6	0	0
Installation failure	9	1.1	9	4	0	0
Internal corrosion	370	43.7	370	161	0	0
Joint failure	16	1.9	16	11	0	0
Mechanical damage	7	0.8	6	5	1	1
Mechanical joint	9	1.1	9	9	0	0
Overpressure	2	0.2	2	1	0	0
Pipe body failure	54	6.4	52	18	2	2
Seam failure	5	0.6	5	4	0	0
Weld failure	0	0	0	0	0	0
Licensee error	19	2.2	19	11	0	0
Miscellaneous	21	2.5	21	9	0	0
Unknown	47	5.6	47	35	0	0
TOTAL	847	100	774	394	13	13
% OF INCIDENTS		100	91.4		1.5	

[1] Statistics include 75 pressure test failures.

Figure 21 shows the types of releases compared to previous years. Leak detection systems, training and awareness programs, automated shut-in equipment, and pipeline patrols are effective in minimizing the effects of releases.

Figure 21. Priority ratings for pipeline releases



The following is a summary of the pipeline releases/hits from January 1 to December 31, 2004:

Ruptures	1.5%	Priority 1 releases	3.2%
Leaks	91.4%	Priority 2 releases	10.5%
Hits, no release	7.1%	Priority 3 releases	79.2%
	100%	No release	7.1%
			100%

Staff review all failure incidents. When the cause of the failure cannot be determined, staff may require the licensee to perform a failure analysis. The licensee must also ensure the integrity of the pipeline and mitigate further occurrences.

All failures are inspected or an investigation is conducted into the failure mechanism. In 2004, field staff conducted 407 inspections and investigated 440 incidents. The total inspections/investigations include the 84 contact damage incidents that occurred in 2004. There were 40 minor unsatisfactory inspections, 52 major unsatisfactory inspections, and no serious unsatisfactory inspections. All unsatisfactory inspections were brought into compliance.

When a pipeline failure occurs, the licensee is required to do an integrity assessment on the pipeline segment that failed and an engineering assessment on the pipeline system that it operates in, which may include one or more of the following:

- undergo pressure testing (of the 200 pipelines tested, 75 failed during the pressure test)
- determine product flow velocities
- conduct analysis of product shipped and received (sampling)
- modify the existing system to enable corrosion rate monitoring
- install corrosion monitoring devices
- conduct internal electromagnetic or ultrasonic inspections
- conduct cathodic protection surveys
- install pigging facilities
- conduct risk assessments

Figure 22 outlines the failure causes. Corrosion continues to be the main cause of pipeline failures. Internal corrosion failures are lower compared to historical data, down from 53 per cent to 44 per cent in 2004. As part of the EUB's investigation of internal corrosion incidents, licensees must implement recommendations from analyses to mitigate future occurrences of pipeline corrosion. Once a failure has occurred in the system, the integrity of the entire system is reviewed.

External corrosion remained relatively constant in 2004 compared to historical data. Reducing failure incidents in older coating systems presents challenges, such as the shielding of cathodic protection, disbondment, temperature variation, and environment stresses.

Figures 22, 23, and 24 are overviews of historical data compared to the most recent year reported.

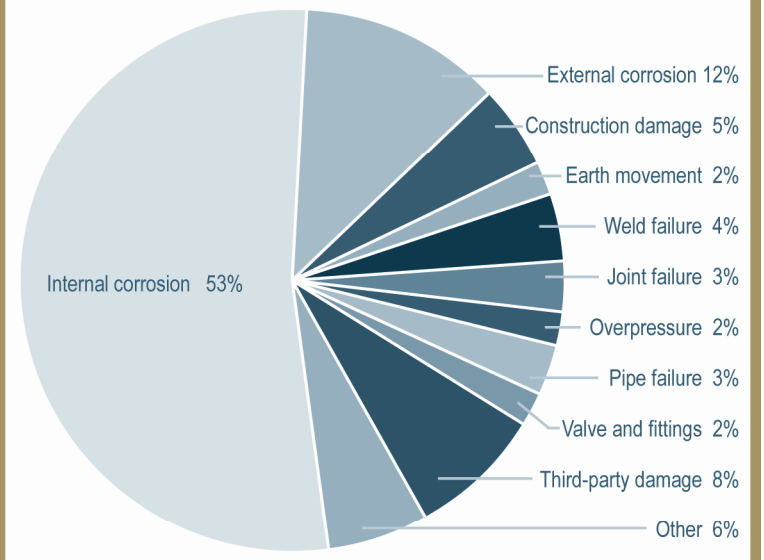
The implementation of *Guide 66: Pipeline Inspection Manual* clarified EUB expectations for identifying and addressing corrosion problems. In addition, *Guide 66* outlines the EUB's enforcement policy related to pipeline corrosion deficiencies.

Figure 23 shows that the top three product lines that are failing are multiphase, natural gas, and water.

Figure 24 shows that the majority of failures are occurring in smaller-diameter gathering lines, primarily the 60.3 millimetre (mm) (2 inch), 88.9 mm (3 inch), and 114.3 mm (4 inch) systems.

Figure 22. Pipeline failures by cause (%)

Historic
1980 - December 31, 2004



2004
January 1 - December 31

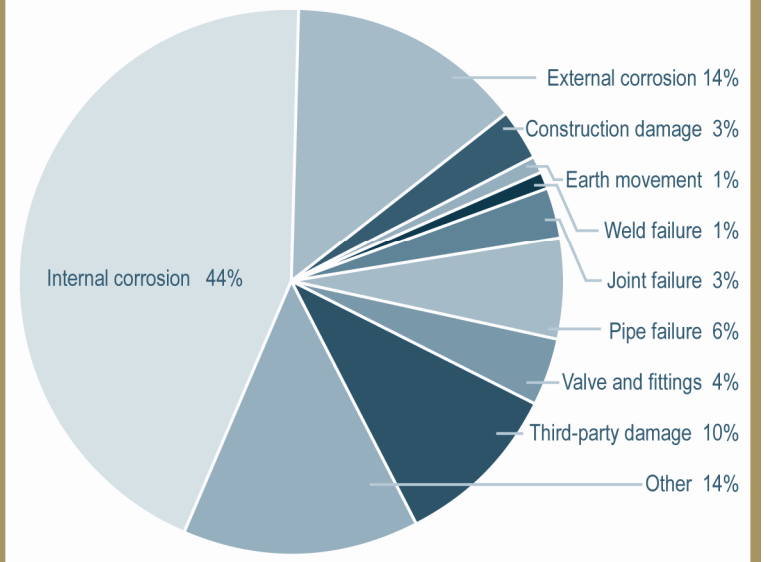


Figure 23. Historical pipeline incidents by product being transported

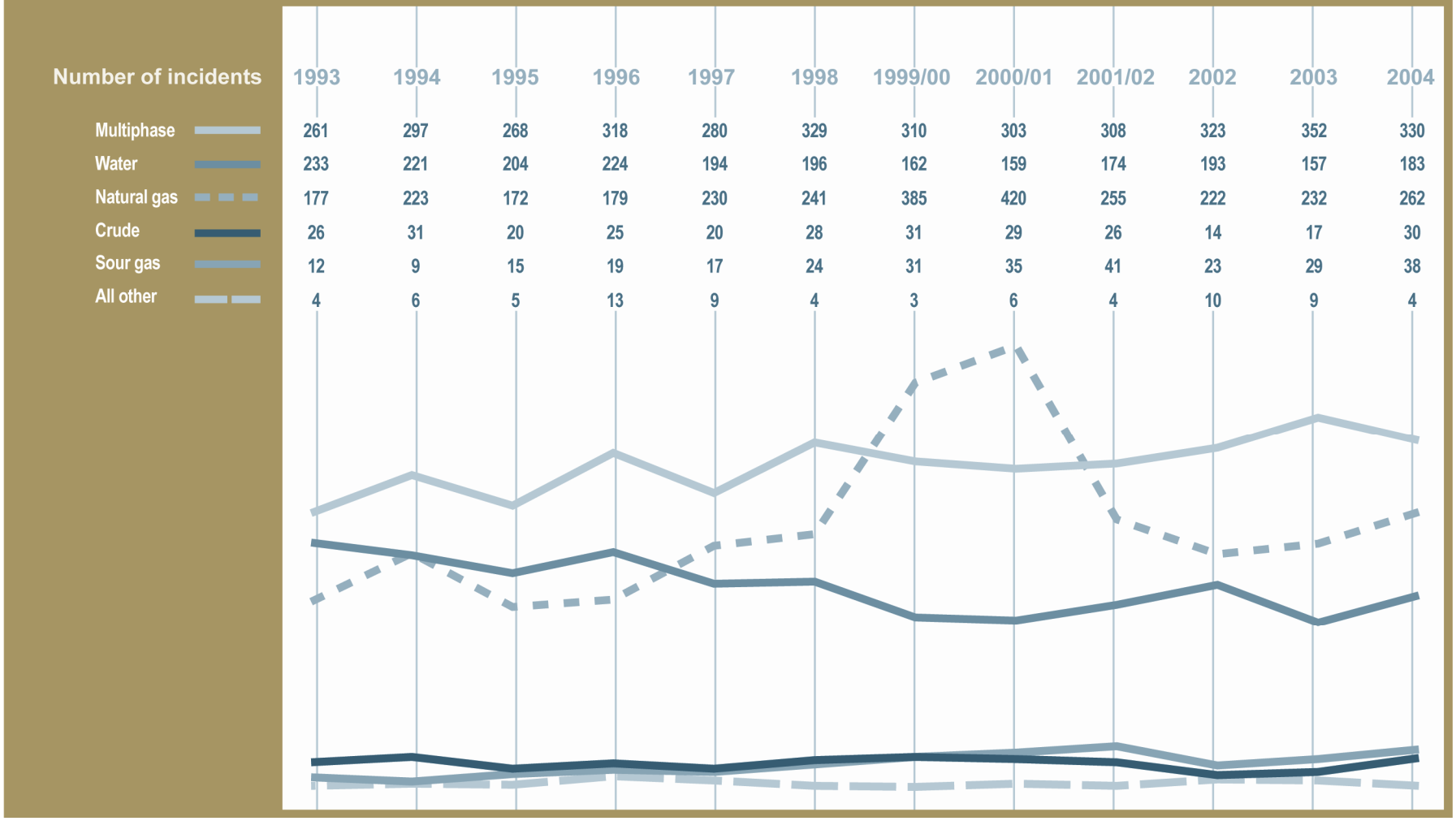
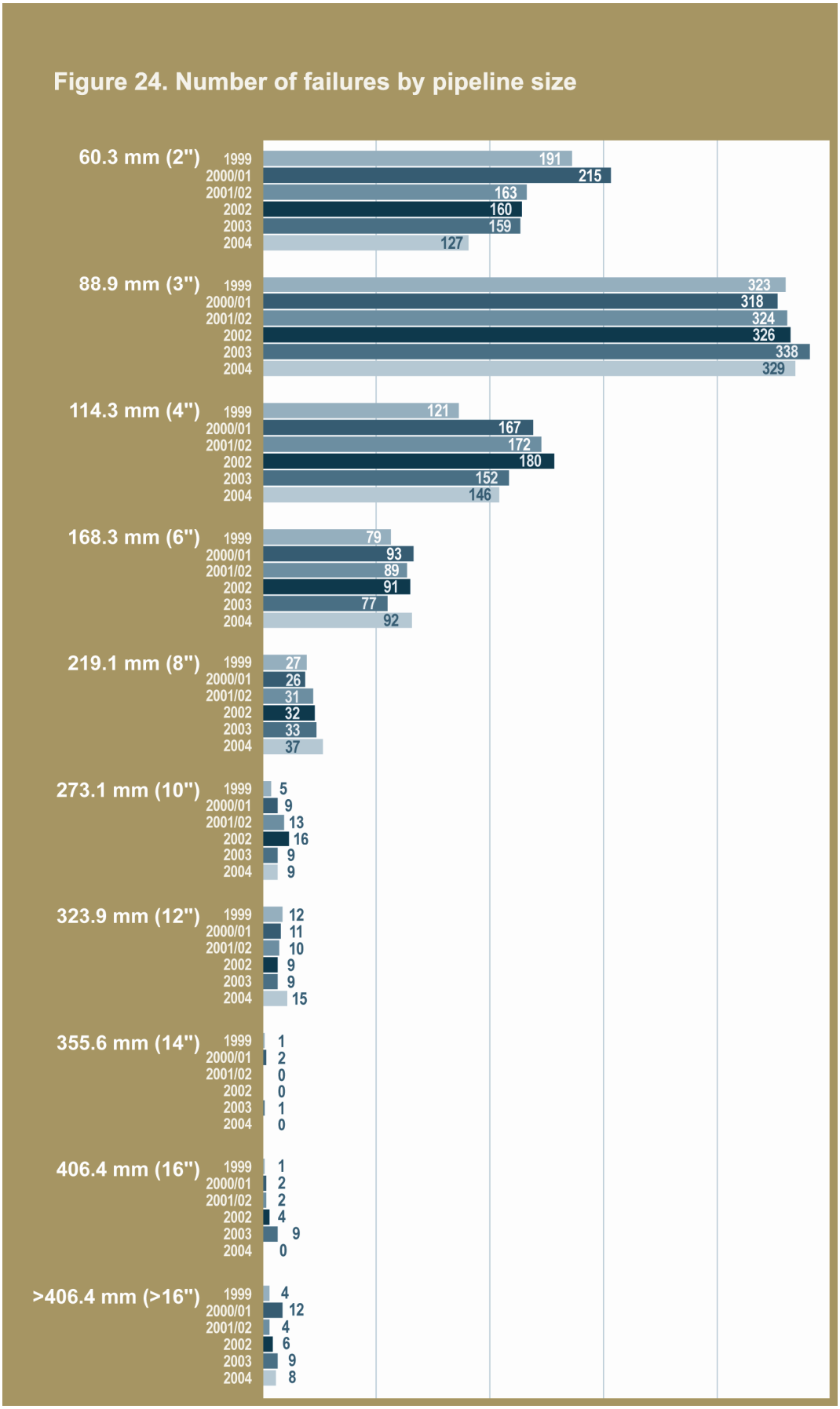


Figure 24. Number of failures by pipeline size



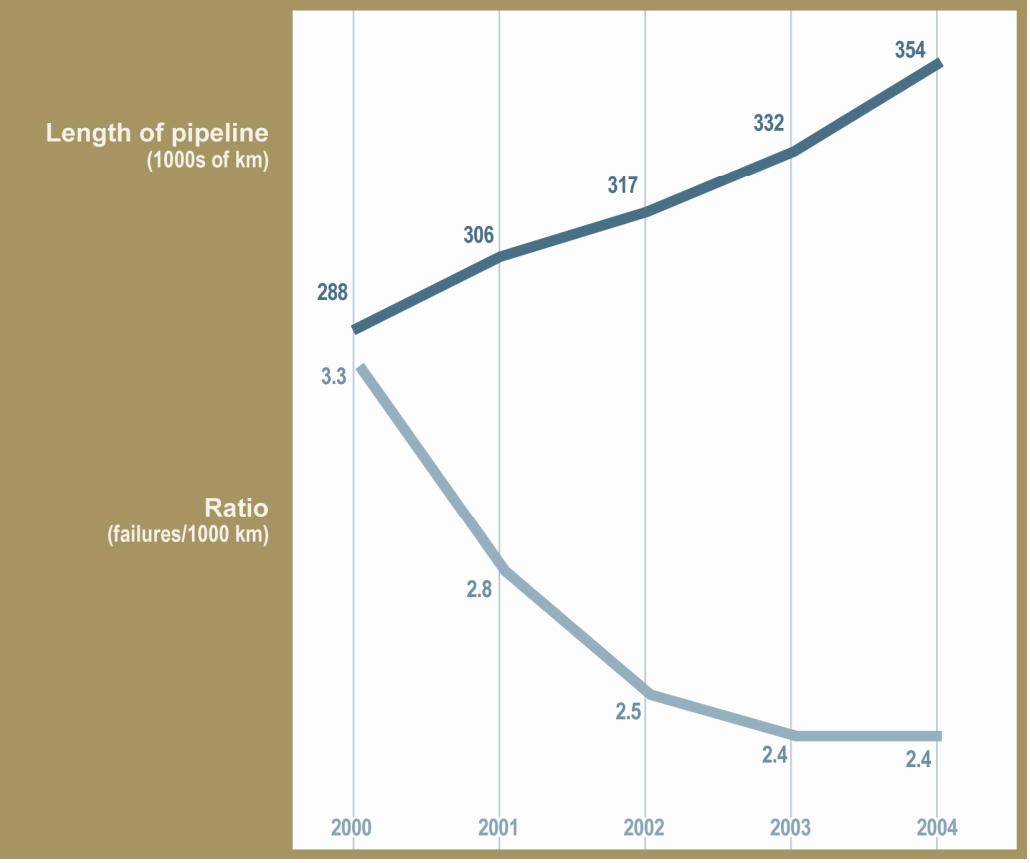
A number of organizations contribute considerable resources towards pipeline integrity, maintenance, operations, and safety. These include

- Alberta One-Call
- Canadian Association of Petroleum Producers (CAPP)
- Canadian Centre for Materials and Energy Technology (CANMET)
- Canadian Energy Pipeline Association (CEPA)
- Canadian Standards Association (CSA)
- Edmonton Area Pipeline and Utilities Operators' Committee (EAPUOC)
- National Association of Corrosion Engineers (NACE)

Regional, national, and international pipeline conferences and workshops are held to share technology and information, which is contributing to a reduction in the pipeline failure frequency rate.

Figure 25 shows a substantial improvement over the 1988 benchmark of 5 failures/1000 kilometres (km).

Figure 25. Incidents compared to total pipeline length



5.3 Construction and Testing Inspections

Field staff conducted 564 pipeline construction and test inspections in 2004, of which 536 were satisfactory, 18 were minor unsatisfactory, 9 were major unsatisfactory, and 1 was serious unsatisfactory. All unsatisfactory inspection items were brought into compliance. This compares to 439 pipeline construction and test inspections conducted in 2003, when there were 405 satisfactory inspections, 25 minor unsatisfactory inspections, 8 major unsatisfactory inspections, and 1 serious unsatisfactory inspections. Examples of unsatisfactory items found include the following:

- Minor unsatisfactory inspection items
  - pipeline applications did not reflect proper information (pipe size, wall thickness, grade of pipe, and correct routing to and from locations). Note that in all cases the materials actually used exceeded requirements. Amendments were required to correct the pipeline applications.

- Major unsatisfactory inspection items
  - wall thickness of pipeline at road crossing improper
  - pipeline girth welds not 100 per cent radiographed for sour service
  - existing pipeline hit during construction
  - pipeline marked in the wrong location; hand excavation should have been done to verify the correct location
  - foreign pipelines not marked and work progressed in a controlled area
  - machinery working within 60 centimetres (cm) of pipeline without supervision

5.4 Operations Inspections

Operations inspections involve a field inspection of the pipeline system and a records review of maintenance documentation. In 2004, field staff conducted operation inspections on 86 licensees, which included the inspection of 285 licensed pipeline systems. The results were 188 satisfactory inspections, 69 minor unsatisfactory inspections, and 28 major unsatisfactory inspections. There were no serious unsatisfactory inspections. All unsatisfactory inspection items were brought into compliance. This compares to 421 inspections conducted last year, of which there were 256 satisfactory inspections, 148 minor unsatisfactory inspections, 17 major unsatisfactory inspections, and no serious unsatisfactory inspections. Examples of unsatisfactory items found include the following:

- Minor unsatisfactory inspection items
  - signage missing, defaced, or had incorrect licensee contact phone numbers
  - record updates to indicate proper operating status of pipeline incomplete
  - documentation of right-of-way patrols incomplete

- Major unsatisfactory inspection items
  - emergency procedures manual information incorrect
  - valves/fittings or flanges not properly rated for pressure of system
  - cathodic protection surveys not performed
  - no cathodic protection

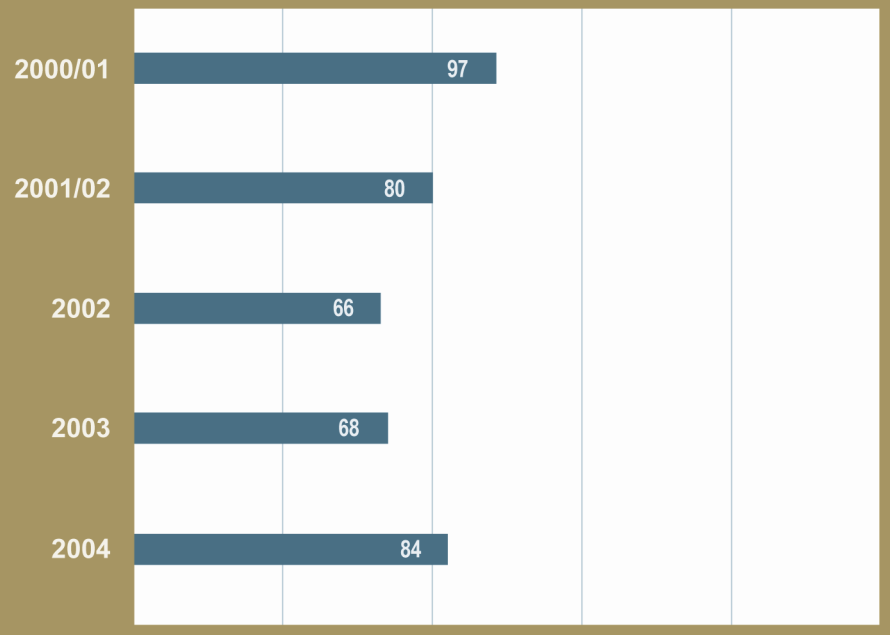
EUB Action

- The EUB will continue conducting detailed operations inspections. Through these inspections, licensees that have failed to submit licence transfers and amendments will be identified and brought into compliance.

5.5 Contact Damage

The goal of this area is prevention of pipeline damage (hits). There were 84 contact damage incidents in 2004 (see Figure 26). There were 2 minor unsatisfactory inspections, 18 major unsatisfactory inspections, and no serious unsatisfactory inspections. All noncompliance issues were addressed. The remaining 64 incidents did not warrant enforcement action following an EUB review. This compares to 68 incidents the previous year, of which 36 incidents had major unsatisfactory items and 1 had a serious unsatisfactory item.

Figure 26. Pipeline incidents due to contact damage—number of hits



Field staff conducted 41 ground disturbance seminars for licensees that were found in noncompliance, with about 900 people from industry and the public attending.

Revisions to the *Pipeline Regulation* to reduce pipeline contact damage are expected to be approved in 2005. Proposed changes include the following:

- All licensed pipelines must register with Alberta One-Call.

- Anyone proposing to start ground disturbance near a pipeline must contact Alberta One-Call prior to conducting the ground disturbance to advise the licensee of the work and to request the licensee to mark the location of the pipeline.

- The licensee's authorized on-site supervisor must complete a certified ground disturbance supervision training course.

EUB Action

- The *Pipeline Regulation* changes are expected to be released in 2005.

5.6 Public Complaints Associated with Pipeline Operations

There were 45 complaints associated with pipeline operations, which is consistent with statistics for 2003. The complaints received were a result of odours and spills from pipeline failures and venting of gas at pigging facilities and pipeline terminals.

6 Environment

One of the EUB's two air monitoring units

6.1 Introduction

One of the EUB's primary responsibilities is to reduce the impacts of oil and gas activities on the environment. Field staff respond to public complaints and inspect oil and saltwater spills, drilling waste disposal operations, and waste management facilities, in addition to rigs, pipelines, and production facilities. Staff work with other government agencies and industry to minimize the environmental impacts from upstream petroleum industry operations.

Field Surveillance also operates two mobile air monitoring units that support our inspection activities at facilities where fugitive emissions are suspected.

6.2 Spills and Releases

6.2.1 Spill and Release Statistics and Inspections

To ensure the most effective response, Alberta Environment (AENV) and the EUB developed *IL 98-1: A Memorandum of Understanding Between Alberta Environmental Protection and the Alberta Energy and Utilities Board Regarding Coordination of Release Notification Requirements and Subsequent Regulatory Response*.

In addition to reducing the number of spills and gas releases, minimizing their effects is also a priority. To accomplish this, licensees must ensure that

- their staff are provided with appropriate training,
- the source of the release is stopped,
- the spill is contained,
- the free fluids and solids are recovered, and
- the spill site is remediated in accordance with AENV guidelines.

Releases are prioritized to allow for an appropriate, timely, and effective response by EUB staff.

- Priority 1 releases are those that pose the most serious environmental and public impact. Field staff make every attempt to immediately respond to the location; however, when that is not possible, all attempts are made to have another regulatory agency respond for the initial assessment. In these cases, staff conduct an inspection as soon as possible.

- Priority 2 releases are those where a significant volume has been released or the impact on the environment is a concern. They may include low-volume releases if the licensee is new or has a poor inspection history. These sites are generally inspected within 7 working days.

- Priority 3 releases are low-volume but may include medium-volume releases if the licensee has a satisfactory inspection history. In these cases, staff have a high degree of confidence that the release will be appropriately handled. Historically, about 25 per cent of priority 3 spills are inspected to ensure they are satisfactorily addressed. In 2004, 26 per cent of priority 3 spills were inspected, which is the same as in 2003.

The new computer database implemented in 2003 has enhanced the criteria used to prioritize releases. As a result, more scrutiny is provided for all releases. The priority of a release is calculated by the following criteria:

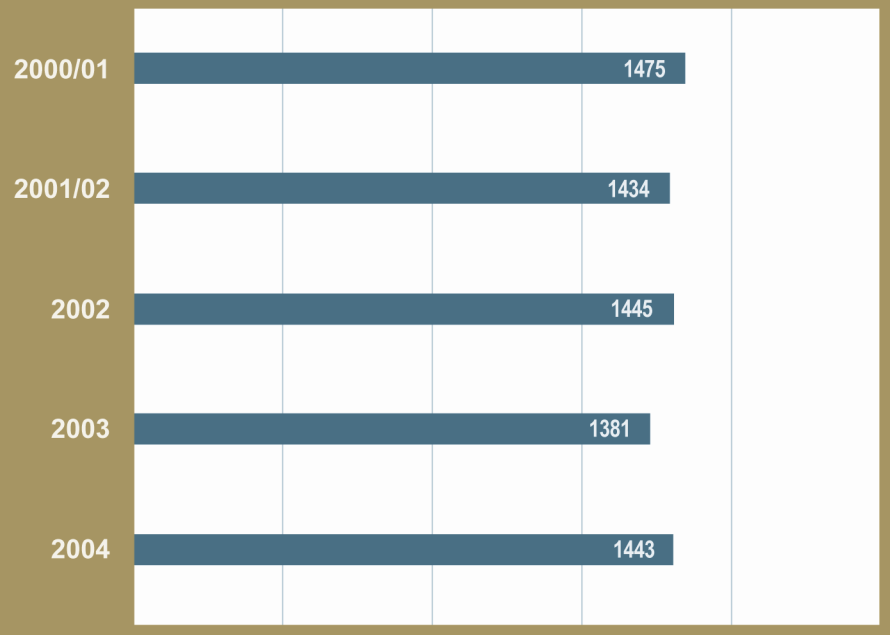
- on-lease or off-lease spill,
- area sensitivity,
- whether release is sweet or contains H_2S,
- type of area affected,
- environment affected,
- wildlife/livestock affected, and
- affected public.

As shown in Figure 27, a total of 1443 spills were reported to the EUB in 2004, an increase from 1381 in 2003. Of the 1443 spills,

- 50 were priority 1 (3.5 per cent),
- 274 were priority 2 (18.9 per cent), and
- 1119 were priority 3 (77.6 per cent).

Field staff will continue to work with industry to improve maintenance and pipeline corrosion control programs.

Figure 27. Number of spills from pipelines and other upstream oil and gas sources



It is important to note that more than three-quarters of all spills were low volume and were usually contained on lease. Inspections were conducted on 620 spills. There were 524 satisfactory spill inspections, 45 minor unsatisfactory spill inspections, 51 major unsatisfactory spill inspections, and no serious unsatisfactory spill inspections (see Section 1.3 for definitions of satisfactory inspection and minor, major, and serious unsatisfactory inspections).

EUB Action

- EUB *Guide 55: Storage Requirements for the Upstream Petroleum Industry* was revised and published in December 2001. Staff monitor compliance to ensure that spills are confined to a small area and that the environmental impact is minimized. We will continue to focus on industry's compliance with *Guide 55*.

6.2.2 Main Causes of Releases

Pipeline corrosion and equipment failure were the leading causes of liquid releases in 2004, consistent with causes found in previous years. Figure 28 shows the most significant sources and causes of releases and indicates that industry must become more effective with its preventive maintenance and corrosion control programs.

Figure 29 shows the volume of hydrocarbon liquid and produced water spills over a five-year period. The spill volumes of hydrocarbon liquid and produced water in 2004 were 8571.5 cubic metres (m^3) and 15 255.2 m^3 respectively. This is a 26.7 per cent increase in hydrocarbon liquid spilled compared to 2003 and a 4.5 per cent decrease in produced water spilled compared to 2003.

Figure 28. Spills by source and failure type, 2004

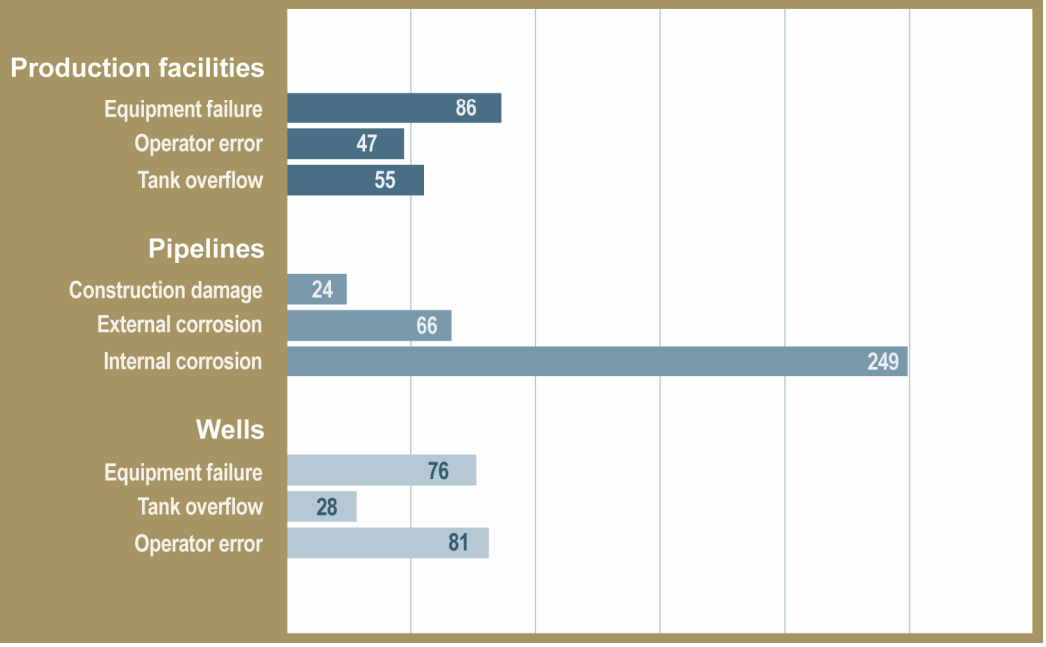
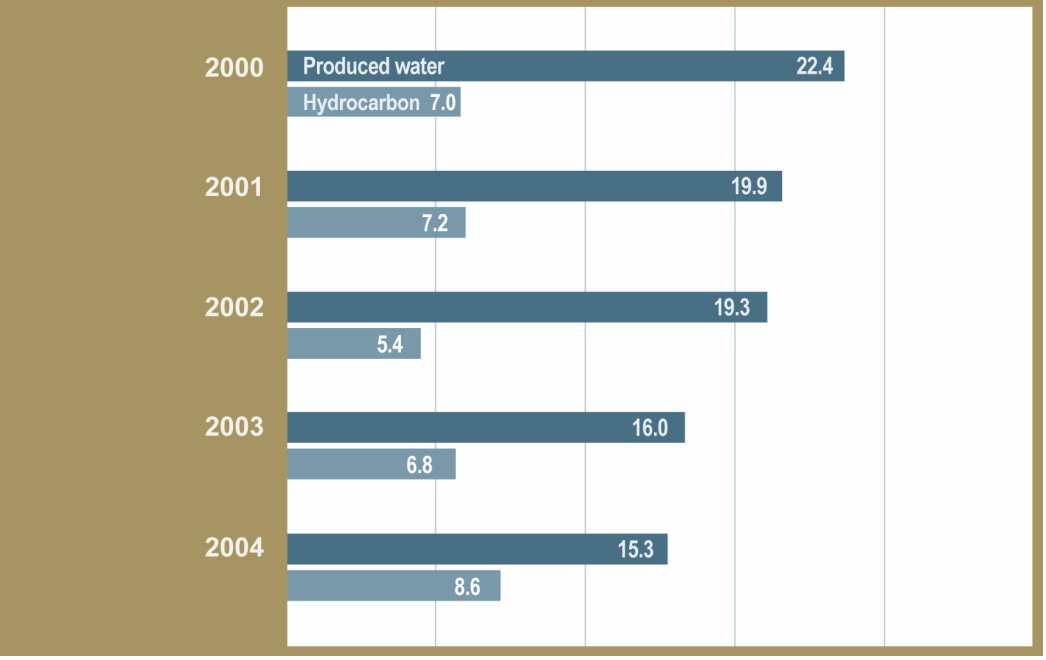


Figure 29. Reported volumes of hydrocarbon and produced water spills (1000s of m^3)



6.2.3 Release Prevention

Spill response training exercises ensure that industry personnel are adequately trained to effectively respond to spills, thereby minimizing the impacts. There are 17 oil spill cooperatives throughout the province, 2 of which overlap into Saskatchewan and British Columbia.

In 2004, field staff participated in all 17 oil spill cooperative training exercises and provided information on release statistics, release reporting requirements, and regulation changes.

The EUB strongly supports the spill cooperatives and regularly participates with groups, such as the Western Canadian Spill Service (WCSS), to enhance spill response preparedness throughout the province. Cooperative meetings and spill exercises provide staff with the opportunity to communicate the importance of spill prevention.

EUB Action

- WCSS, Petroleum Industry Training Service (PITS), industry, and the EUB are working together to improve spill prevention programs. Spill response training will continue to improve industry response capabilities and reduce the environmental impacts from spills. The EUB will concentrate on proactive spill prevention measures at the oil spill cooperative meetings and exercises in 2005.

6.3 Mobile Ambient Air Quality Monitoring

6.3.1 Monitoring Equipment

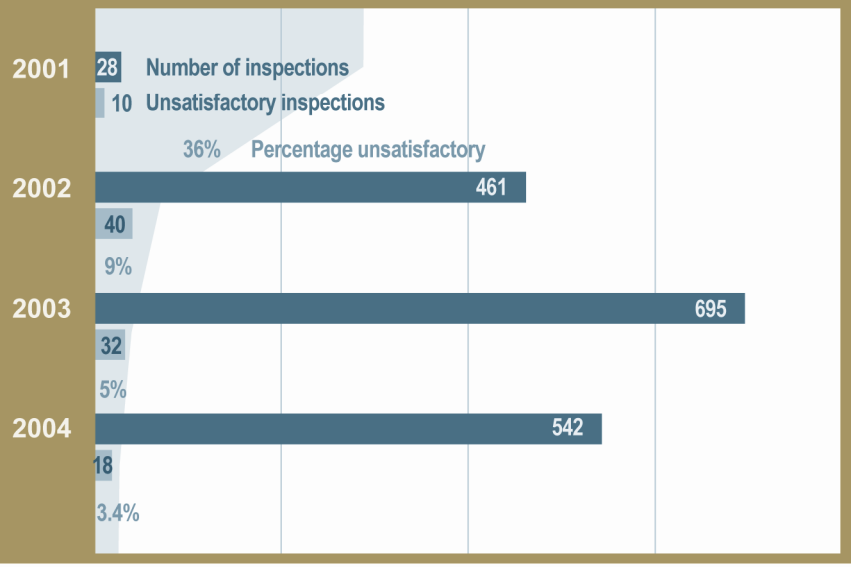
Field Surveillance has two ambient air monitoring units (AMUs) equipped with analyzers capable of reading and recording H_2S and SO_2 emissions in the parts per billion (ppb) range. In addition to the analyzers, the AMUs are capable of measuring and recording wind speed and wind direction. There are two air monitoring technicians to operate the units.

6.3.2 Routine and Complaint Response Monitoring

The two AMUs assist inspection staff in identifying facilities that emit fugitive emissions. In 2004, the AMUs conducted mobile monitoring a total of 76 days, plus 3 days in stationary mode. Figure 30 shows historical air monitoring results and industry's compliance record. Industry is improving its record with respect to reducing emissions from oil and gas facilities.

In addition to conducting routine monitoring, responding to public complaints, and conducting stakeholder education and awareness, the AMUs are available to respond to emergencies. In 2004, the AMUs responded to one emergency situation.

Figure 30. Number of facilities monitored and improvement in reduction of emissions



6.4 Waste Management Initiatives

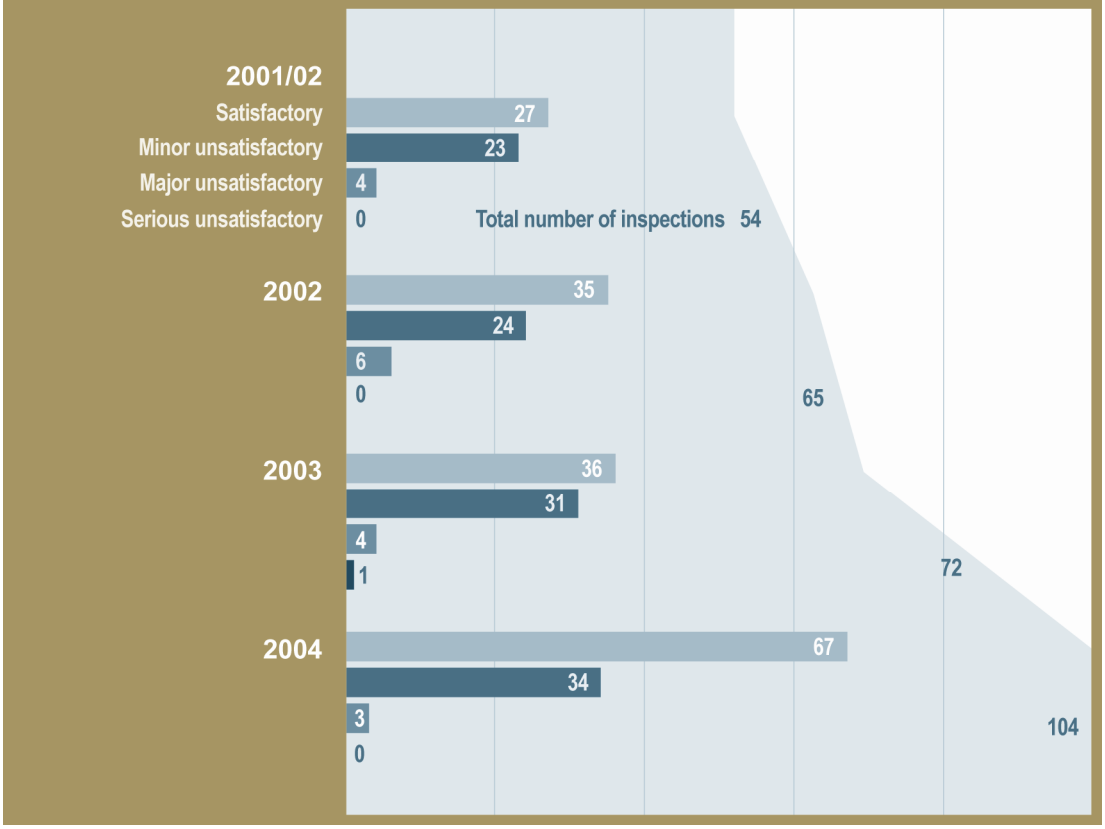
6.4.1 Waste Management Facilities

There are 72 active oilfield waste management facilities approved by the EUB. Waste management facilities, as described in *Guide 58: Oilfield Waste Management Requirements for the Upstream Petroleum Industry,* include

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

In 2004, field staff conducted 104 waste management inspections, resulting in 67 satisfactory inspections, 34 minor unsatisfactory inspections, 3 major unsatisfactory inspections, and no serious unsatisfactory inspections (see Figure 31). Off-lease odours and staining/spillage were the most common deficiencies identified. All facilities were brought into compliance. This compares to 72 waste management inspections conducted in 2003.

Figure 31. Historical waste management facility inspections and results



EUB Action

- The EUB will continue to meet with the Alberta Oilfield Treating and Disposal Association to improve the compliance record of waste management facilities.

6.4.2 Drilling Waste Management

Drilling waste disposal methods are identified in *Guide 50: Drilling Waste Management* as being either routine or nonroutine:

- routine—any disposal that does not require preapproval (e.g., mix-bury-cover, landspray, landspray while drilling, and pump-off)
- nonroutine—any disposal that requires preapproval (e.g., land treatment, biodegradation treatments, and alternative disposals)

In 2004, 9 nonroutine drilling waste sites were inspected. Of those, 8 had satisfactory inspections and 1 had a minor unsatisfactory inspection. All of the unsatisfactory inspection items were brought into compliance. This compares to 2003, when 12 non-routine drilling waste sites were inspected and 8 had satisfactory inspections, 3 had minor unsatisfactory inspections, and 1 had a major unsatisfactory inspection.

In 2004, 120 routine drilling waste disposal inspections were conducted. Of those, 94 had satisfactory inspections, 11 had minor unsatisfactory inspections, and 15 had major

unsatisfactory inspections. There were no serious unsatisfactory inspections. This compares to 2003, when 52 routine drilling waste sites were inspected and 30 had satisfactory inspections, 4 had minor unsatisfactory inspections, and 18 had major unsatisfactory inspections.

EUB Action

- *Guide 50* is currently under review; the new edition is scheduled for completion in 2005.