



Proof Statement and Results

Cominco's SULLIVAN MINE

(180 Miners Underground
Operation & Production)

**86% Reduction in
Lost Time Accidents
(from 7 to 1 LTAs)**

**46% Reduction
in Incidents
(really First Aids)
(from 33 to 18 Incidents)**



Jim Burns' first client, Sullivan Mine, Results from his prototype of the Intellectual Property known as PASS

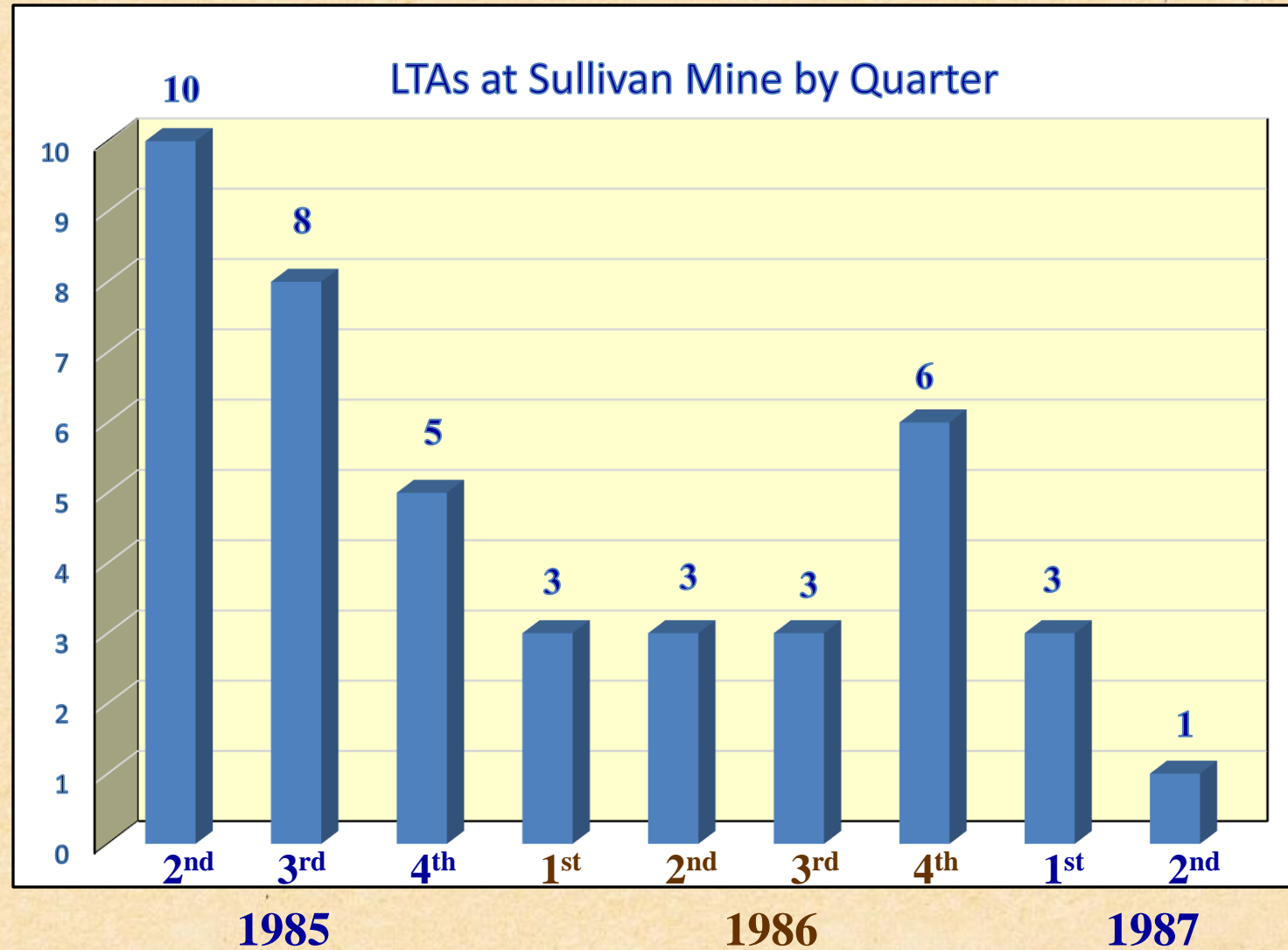


LTAs by Year

1985 = 27

1986 = 15

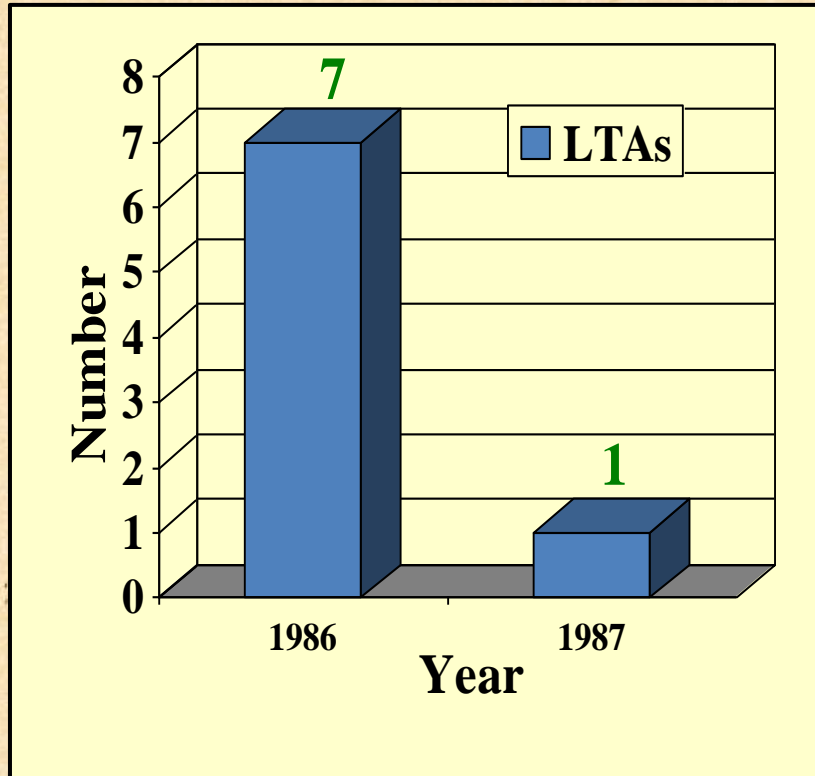
1987 = 10*



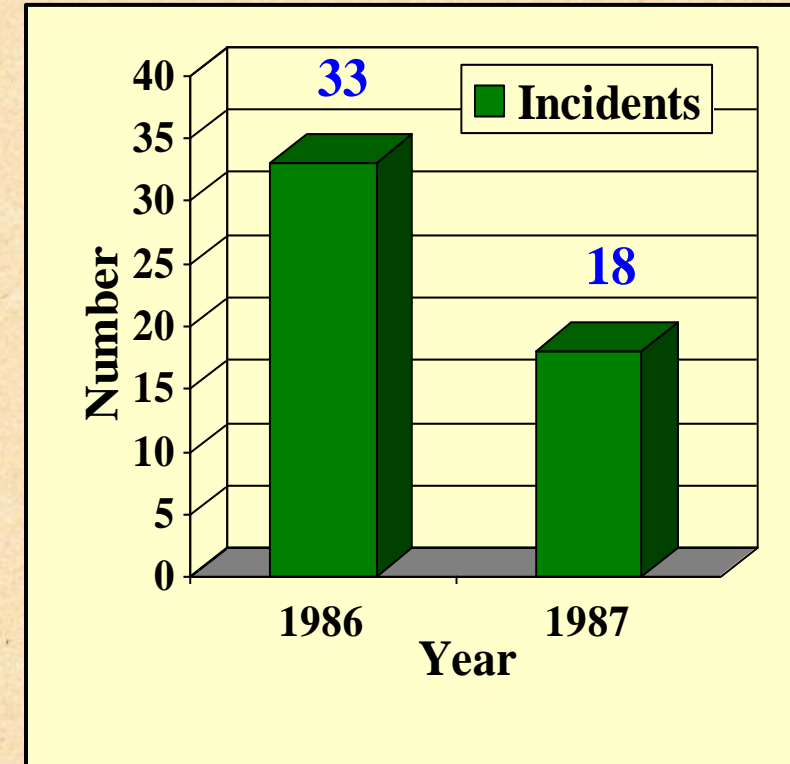
*Projected

LTAs & Incidents at Cominco's Sullivan Mine

(Mining Department)

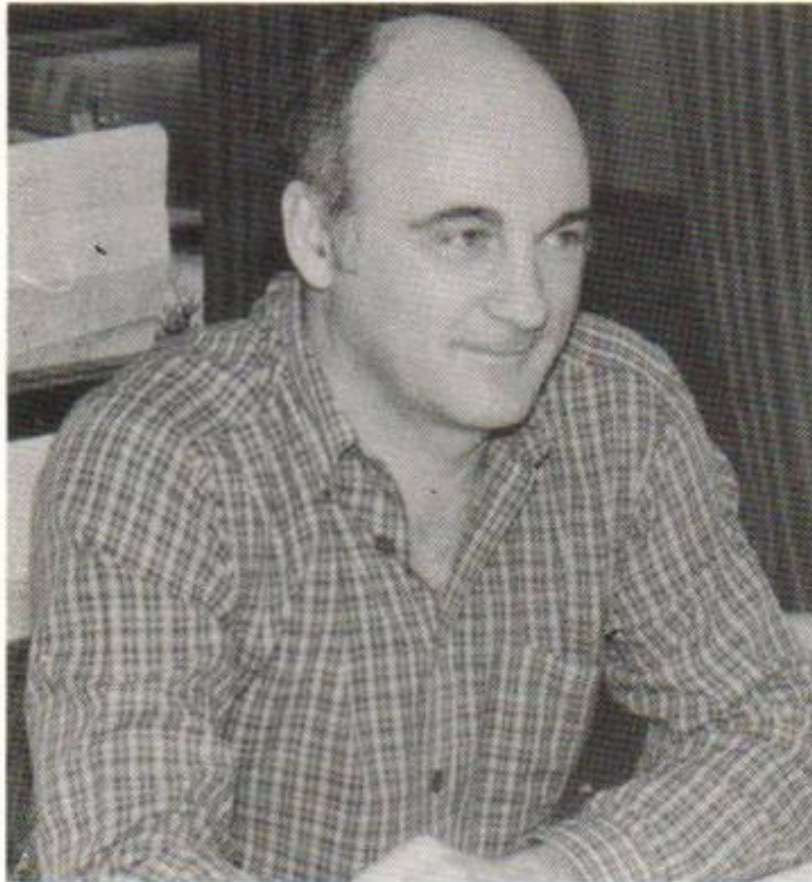


**86% Reduction In
Lost Time Accidents**



**46% Reduction
in Incidents**

Sullivan Mine: Proof Statement



BILL McLELLAND

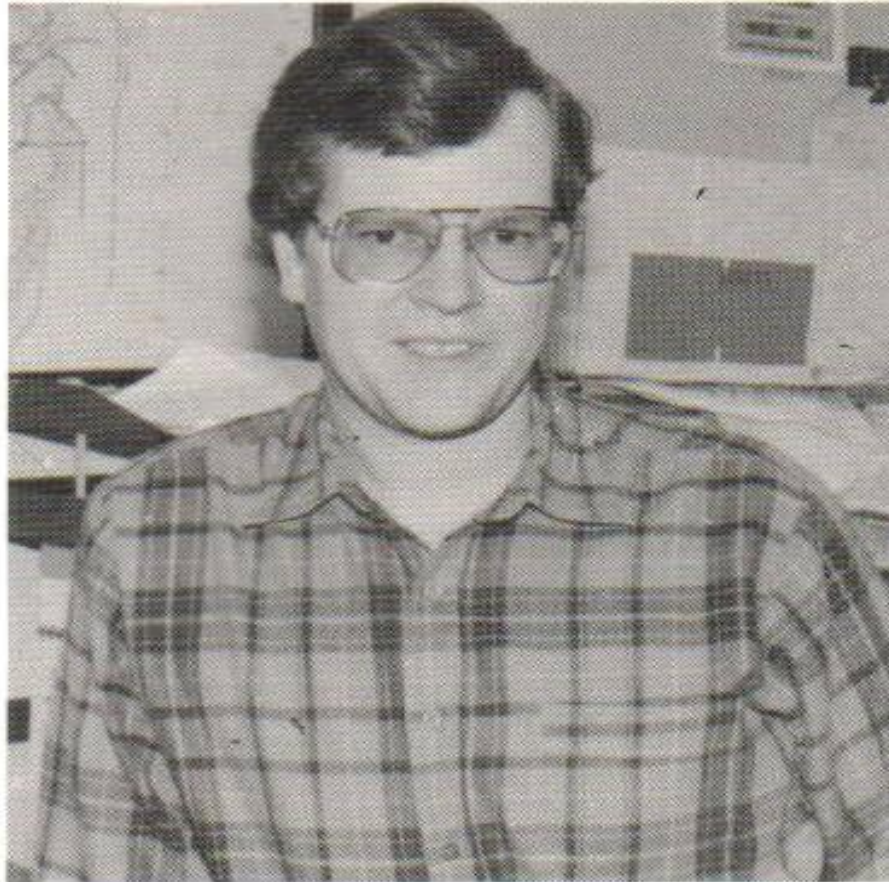
*Sr. Technician
Long Hole Drilling*

Suggested Safety Net

Bill McLelland recalled the use of a safety net, back in the early '70s, when working in long raises.

Being aware of a similar situation, he expressed concern for the safety of those working in there. In discussions with his supervisor, Scott Herr, he described the safety net that had been used in earlier years.

Sullivan Mine: Proof Statement



SCOTT HERR

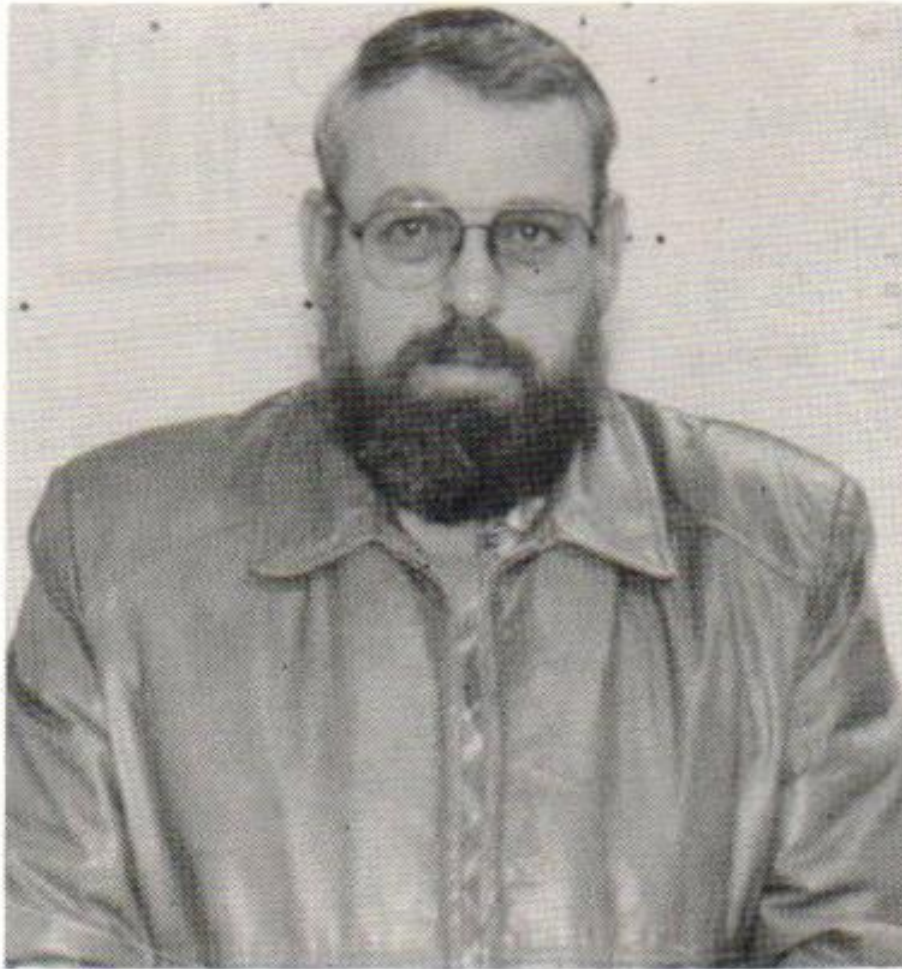
*Senior
Mining Engineer*

Followed up on suggestion

Scott Herr pursued Bill McLelland's suggestion of the safety net with the Safety Department. Both Scott and Bill held discussions with the various foremen and supervisors.

The consensus was—
LET'S DO IT.

Sullivan Mine: Proof Statement



BILL CAIRNS

*Shop Attendant
Mechanized*

Constructed Safety Net

Bill McLelland made a sketch of the safety net and arranged for Bill Cairns to construct one in the 3500 Level Bit Shop.

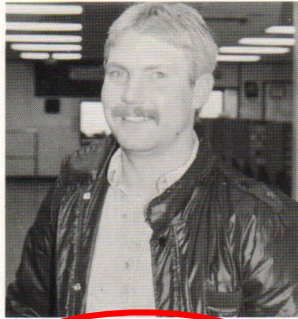
The net is a lacework of $\frac{1}{4}$ " chain that covers the muck pass when miners are working at the face. The net swings away to one side when blasting, to allow the broken muck to fall down the raise.

Another safety net, of an improved design, is to be built by Bill Cairns for use in future situations.

Sullivan Mine: Proof Statement



SAFETY NET SAVES MINER



BOB WHITE
Miner

On December 18, 1986 conventional miners Bob White and Bill Horgas were drilling a round in a long raise at the Sullivan Mine. Bob had just moved the stoper and braced himself to start drilling when his foot slipped off the sprag.

He and the stoper fell approximately 15 feet down the raise into the safety net. Bob suffered multiple bruises to the face, back, arm and hip. If the safety net had not been in place, Bob would have fallen approximately 350 feet down the raise.

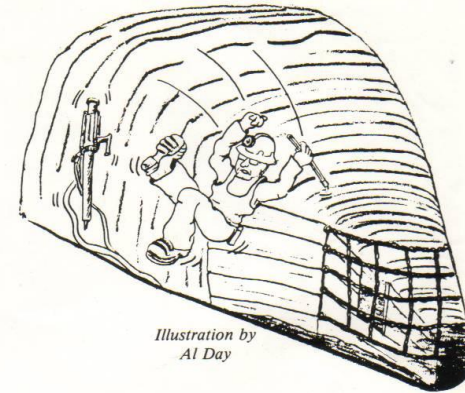
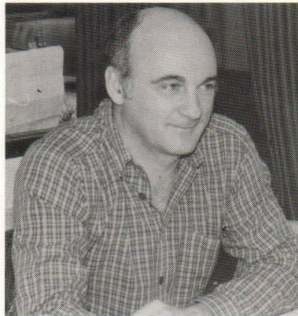


Illustration by
Al Day

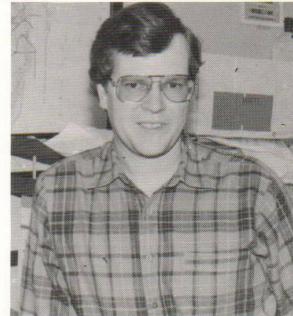


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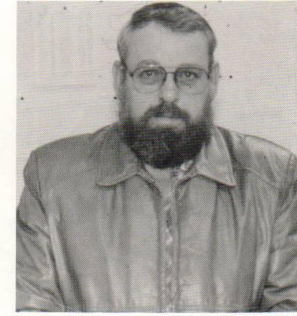


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EMPLOY SAFETY — IT WORKS!

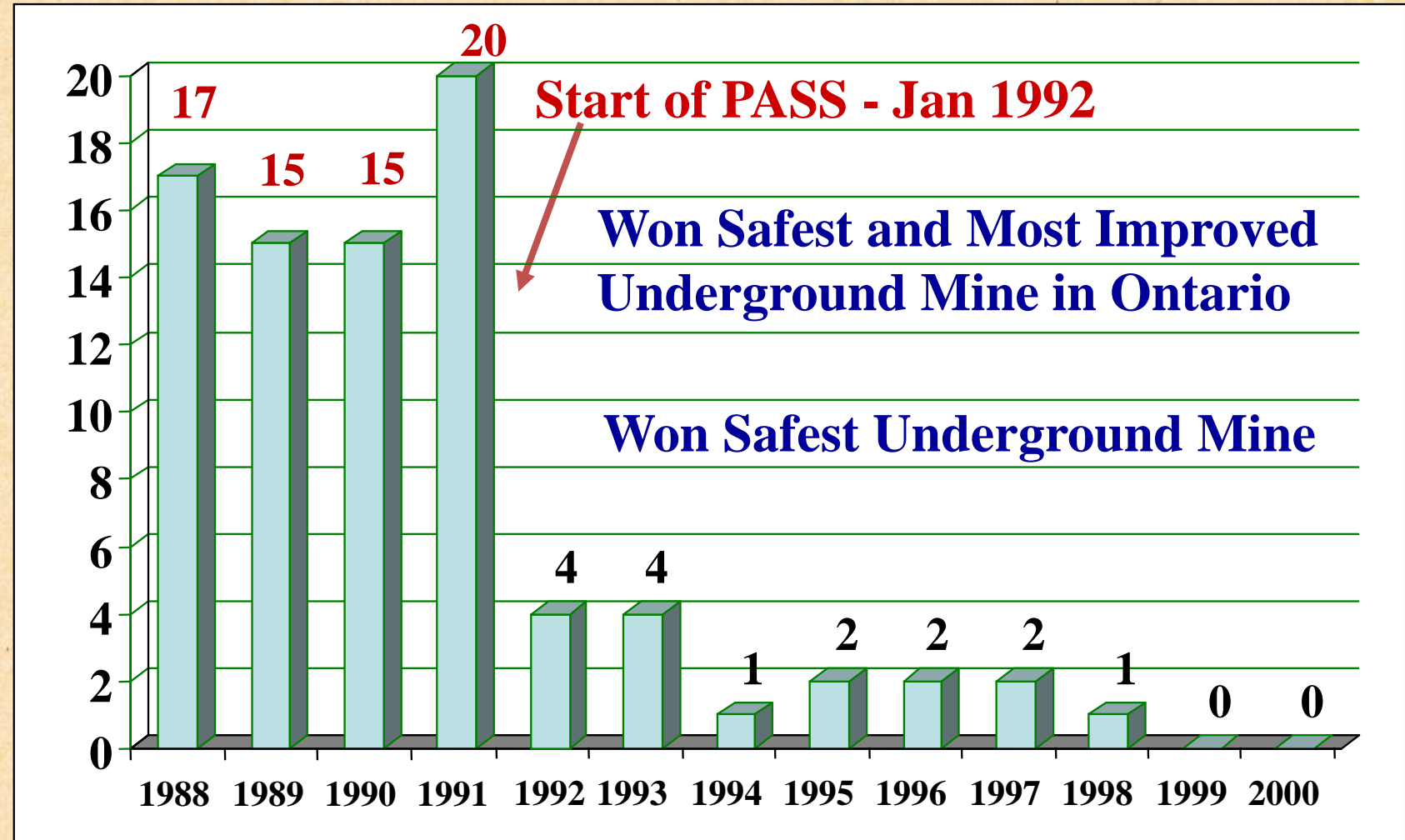
This came out of a Safety Huddle in the Engineering Office!

Lost Time Accidents at the Holt-McDermott Mine

Owned by Barrick Gold, Kirkland Lake, ON, Canada



NUMBER



YEARS

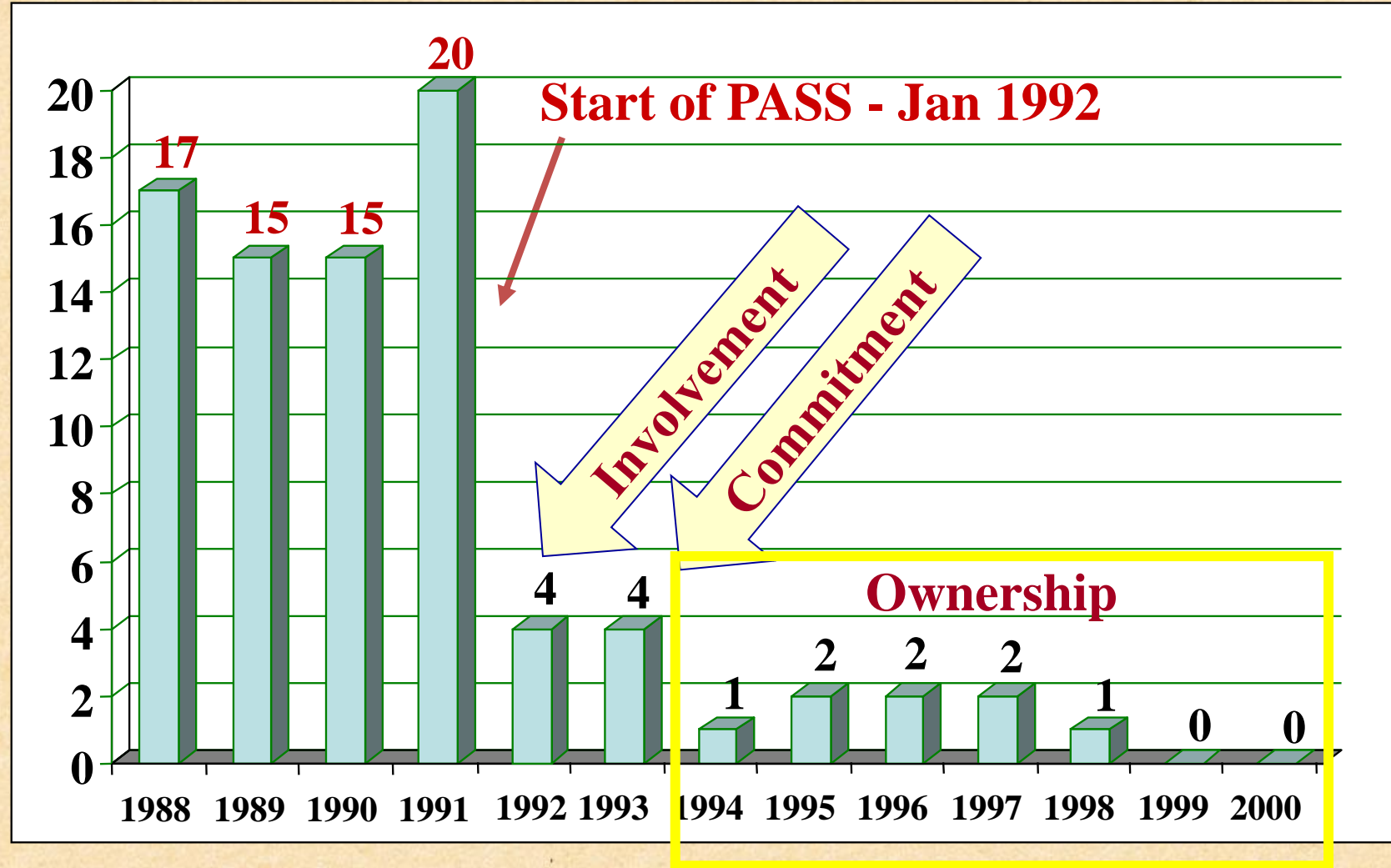
124 Unionized Employees; 90 are Underground Miners

Lost Time Accidents at the Holt-McDermott Mine

Owned by Barrick Gold, Kirkland Lake, ON, Canada



NUMBER



YEARS

It is all about
the Organization's
Leadership and
Safety Culture

For the Sixth Consecutive Year (2014 - 2019), the New Gold's New Afton Mine was awarded the John T. Ryan Award for Safest Underground Mine in BC and Yukon!



The New Afton Mine has an excellent Safety Culture due to their Organizational Leadership and the alignment of their Values, Systems and People at all levels

I am proud of the fact that I have been working with them from the beginning (2008) and they continue to be superb at embracing the principles of SupLex®

Lundin Mining is building a truly world-class underground nickel and copper mine in Michigan's Upper Peninsula.



The Mining contractor, Cementation US, has been on the project for over 1000+ days without ever having a lost time!

Lundin will employ 500 contractor employees during construction and 400+ jobs during operations.

“Safety is not about numbers – it’s about people. While we have one of the best records in the industry, our goal is an injury free workplace where everyone goes home safe and healthy each and every day.”

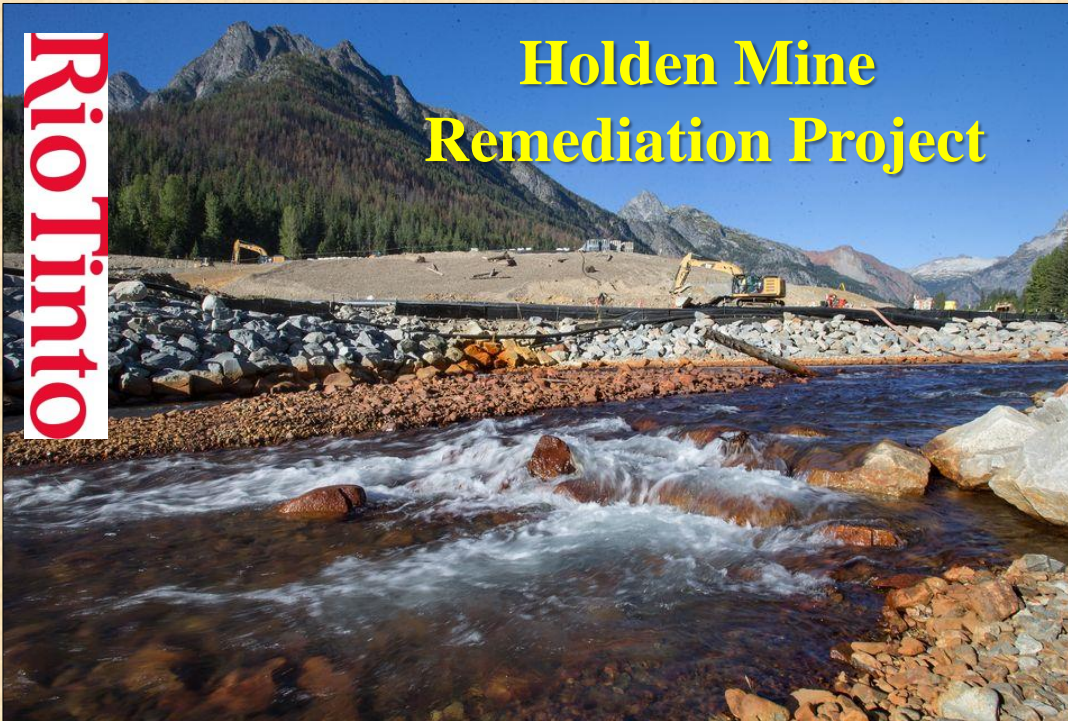
Constancia Mine: US\$ 1.7B; Mine-Life 22 years and is located in the South-eastern Andes of Peru

Constancia puts safety on the “line:” 21 million hours and only one lost time accident in 2014 and recorded a 0.1 LTA frequency



One of the tools employed is the Positive Attitude Safety System (PASS). Already used at Hudbay’s mines and projects in Manitoba, PASS is based on facilitated discussions at every level of an organization.

POSITIVE ATTITUDE SAFETY SYSTEM (PASS)



The Holden Mine remediation project is a federally mandated cleanup located in a remote spot in the Okanogan-Wenatchee National Forest above Lake Chelan in Washington State.

The project will employ more than 500 people and at any one time there are between 200 and 300 employees on site

After five years of construction, Rio Tinto is wrapping up major construction on the \$500 million Holden Mine Cleanup Project.

Safety results since implementing PASS in the last year (Season) of the project
No lost Times Accidents

From their Newsletter from February 3 2017

Update From Holden Mine

During the 2016 Holden Mine design build construction season, Taggart Schoenrock, Richard Jordan, Travis Rauscher, and their entire team did a great job working together with our engineers and stakeholders to produce our design in very limited time, procure materials, and build the projects.

With an incredibly short construction window, a logistically challenging site, and various sub-contractors the IMCO design build team was able to complete a staggering 30,000 square feet of building space, including three maintenance buildings for Holden Village, the Holden hydroelectric building, a huge lodge to support the operations at the WTP, two bridges, and

even a basketball court! This was an incredible accomplishment that showed the dedication and commitment of all the IMCO employees.

Completing these projects on time, in a diverse and ever changing environment is a display of the various skillsets and determination of our employees.

“The most rewarding thing about the Holden project has been working together with a great group that is here working productively and keeping a great attitude. The project team is closer than any previous job I have been on,” said Nick Miller.

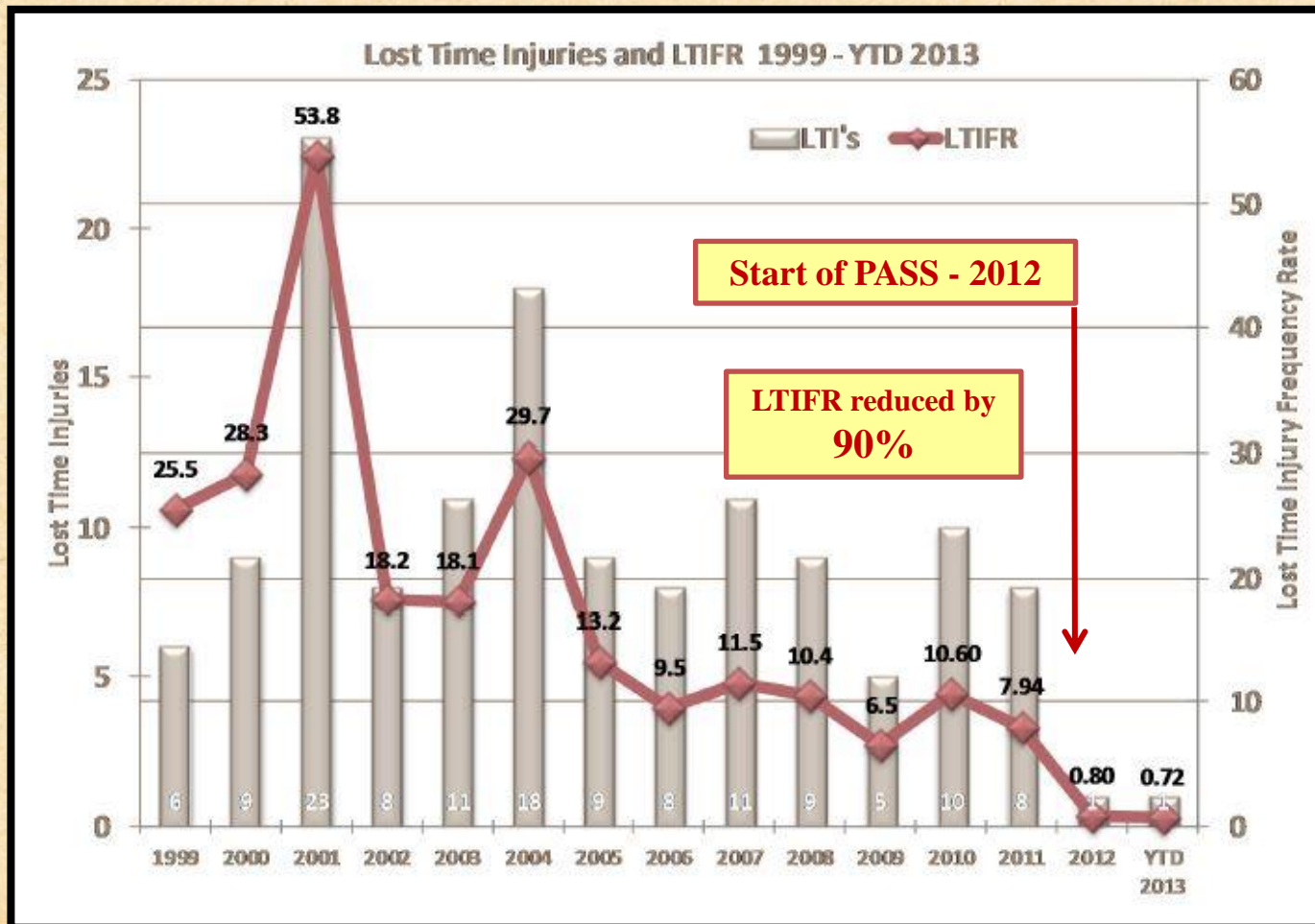


COBAR MANAGEMENT PTY LTD
CSA Mine, Central NSW



Glencore CSA Mine

Date of implementation February 2012
Location: Cobar, NSW, Australia
Owned by: Glencore CMPT
Type of operation: Underground Copper Mine
Size of the workforce: 350 employees and staff and 190 Contractors



Kestrel Underground Coal Mine and the Kestrel Mine Extension (KME)



Kestrel Underground Coal Mine and the Kestrel Mine Extension (KME)



Date of involvement: Kestrel: Continuously since 1999 and
KME: from Aug 2008 to Sept 2013 (entire project)

Location: Central Queensland Australia

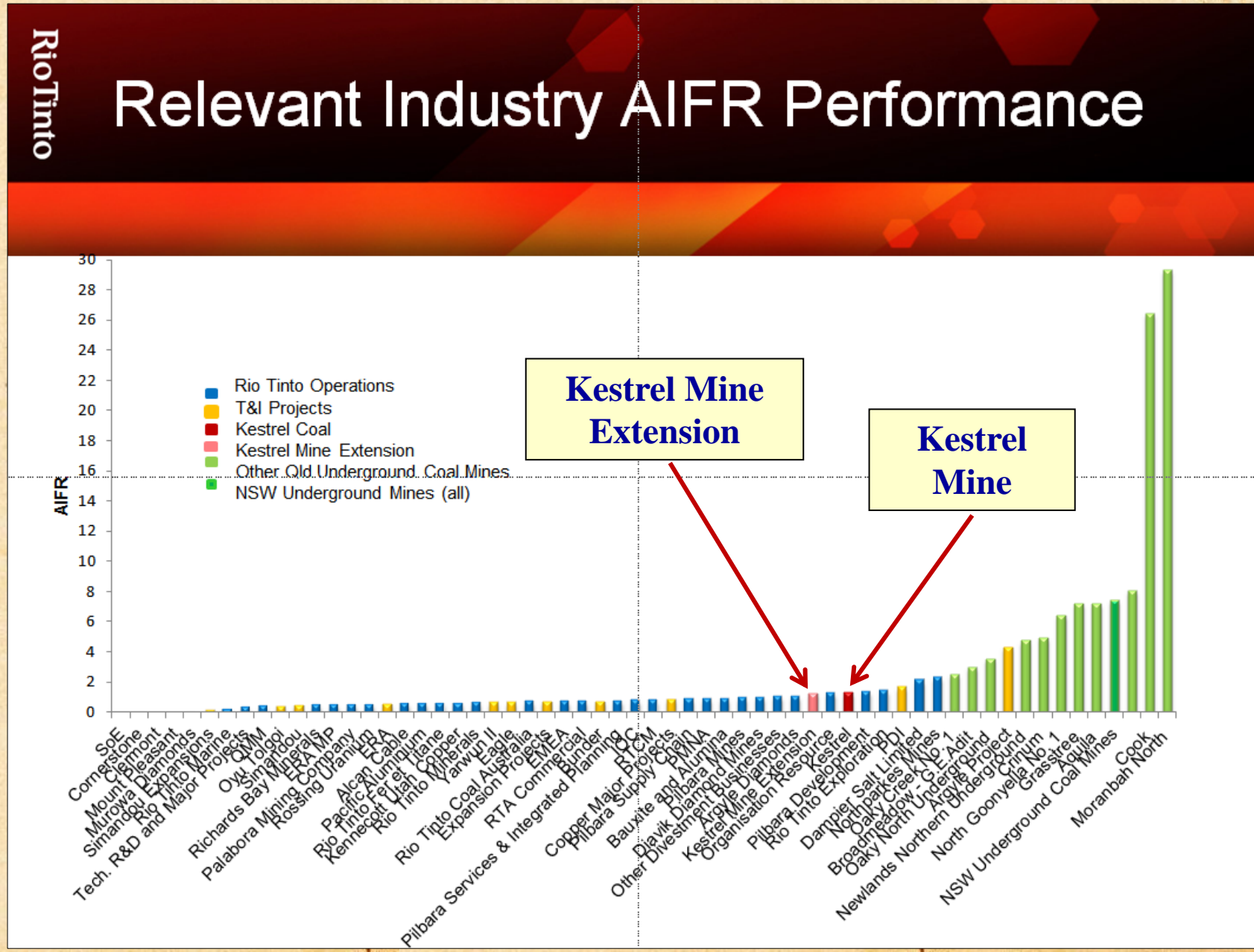
Owned by: Rio Tinto Coal Australia (RTCA)

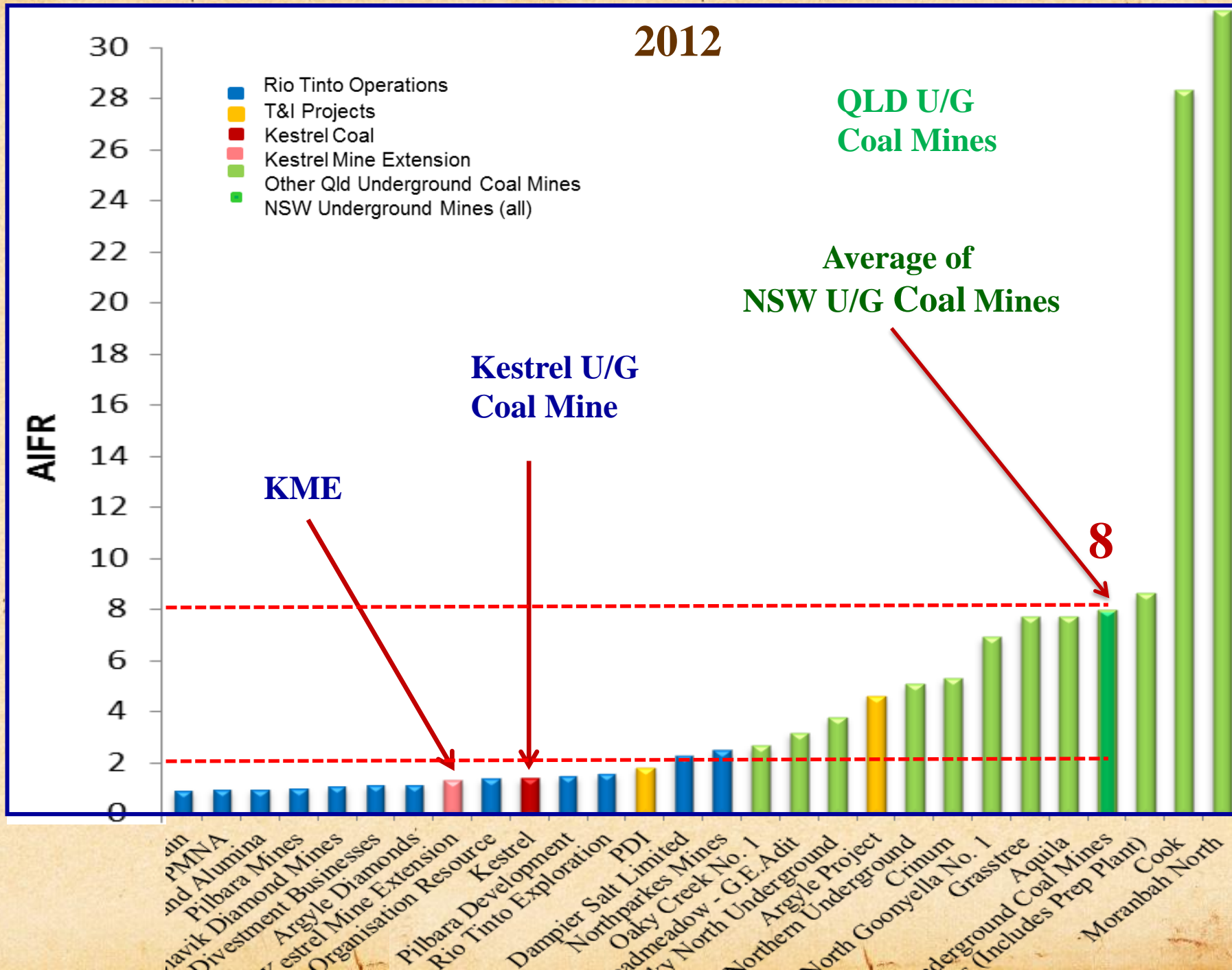
Type of operation: Underground Coal Mine and Construction of
Underground and Infrastructure (\$2B)

Size of the workforce: 500 at Kestrel Mine and 1,500 construction
workers (at its peak)

In 1999, Rio Tinto acquired the Gordonstone Mine and renamed it to Kestrel. Despite the initial industrial action during the acquisition of the mine, PASS was accepted and embraced by the underground workforce. In 2008, KME implemented PASS within the various contractors during the construction and commissioning stages.

Kestrel Operation and the \$2B Expansion (during the busiest construction boom in QLD history) continued to Improve Safety and be a leader in Safety.





In March 2014, Kestrel Coal Mine was named the ‘Most Improved’ operation in the Rio Tinto CEO Safety Awards. Sam Walsh CEO, visited the site in Queensland, to present the trophy and meet key personnel.

Sam Walsh said Kestrel is a Leader in safety in the Australian underground mining industry. “The team here at Kestrel can be very proud of the way they’ve continuously improved safety,” he said.



“At the end of the day, Safety is all about People and Kestrel Mine has a real focus actively engaging all team members in the journey towards zero harm.”

The general manager, John Coughlan, expressed his pride in every person working at Kestrel Mine. “This award recognises the deep commitment we have made in developing a strong safety culture in the way that we work.”

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OCI Wyoming owned by Ciner ***Wins The IMA-NA Safety Achievement Award***

The Industrial Minerals Association award for Safety Achievement, for the Best Reportable Injury Rate, was presented to OCI Wyoming L.P. The award was for 2009 and was in the “Large” category (more than 700,000 employee hours).

“OCI Wyoming had an Injury Rate of 1.56 per 200,000 hours compared to average of 2.72 for all metal and non-metal mines” This marks the first time a ‘Trona Mine’ has been recognized with this Safety Achievement Award.

The implementation of the PASS System in 2004 and their results demonstrated their hard work and efforts have been recognized on a national scale.

Facility is a four-time winner of the U.S. Department of Labor Sentinels of Safety award for being the country’s safest underground mine

Again, Ciner’s OCI Wyoming wins Industrial Minerals Association of North America Safety Award for 2019

**Our Most
Famous Client**



**Chilean drilling
company:
Geotec Boyles Bros.**

**All 33 Miners Rescued
at San José Mine in Chile**

2010



Jeff Hart

Chilean drilling company: Geotec Boyles Bros.



PASS Safety Huddle and their PASS Board

They Rescued All 33 Miners at San José Mine in Chile

2010



Letter from
Mick Davis,
CEO of Xstrata
October 19, 2010

19 October 2010

Dear Colleague

No doubt you have been following developments at the San Jose mine in Chile in which 33 miners were rescued after being trapped almost 700 meters underground for 69 days. I am equally certain you are as relieved as I that they all reached the surface safely, thanks to a mammoth effort by the Chilean government, coordinated through the national copper producer, Codelco, and the actions of many other individuals and organisations who contributed to the rescue mission.

I am very proud that Xstrata also had a role to play, initially in searching for the miners and subsequently in recovering them.

Xstrata Copper funded the cost of a geologist, transport of state-of-the-art equipment and the measurement work to ensure the accuracy of the search drill holes which ultimately located the miners for the first time, confirming after 17 days that they were still alive.

Furthermore, our joint venture with Anglo American and Mitsui, Collahuasi, provided the drill rig and funded the associated specialists and management who drilled the 26 inch hole through which the 33 miners were ultimately brought to the surface.

I am also told that the Collahuasi drilling team implemented the daily PASS safety system, utilised at many Xstrata sites around the world, prior to each shift to ensure their work was being carried out safely. This system was subsequently adopted by the other drill rigs at the mine site.

While being extremely proud of our involvement in the rescue of these 33 brave men, it reinforces more than ever how focused we must be to ensure every Xstrata employee is able to work safely and return home each day in good health. Each of us must ensure we take responsibility for our own and our colleagues' safety.

Sincerely

Mick Davis

M L DAVIS



**Jeff Hart, chief driller,
being hugged by the
sister of one of the
trapped Chilean miners**



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Minera Alumbrera



Alumbrera Mine

**As of June 30, 2004, Minera Alumbrera
Achieved over 1,5000,000 Man-Hours
without a Disabling Injury or Lost Time Injury.**

Alumbrera Mine



**This Argentinean Mine has a workforce of
1,650 Employees and Contractors**

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The Mining contractor, Cementation US, has been on the project for over 1000+ days without ever having a lost time!

Lundin will employ 500 contractor employees during construction and 400+ jobs during operations.

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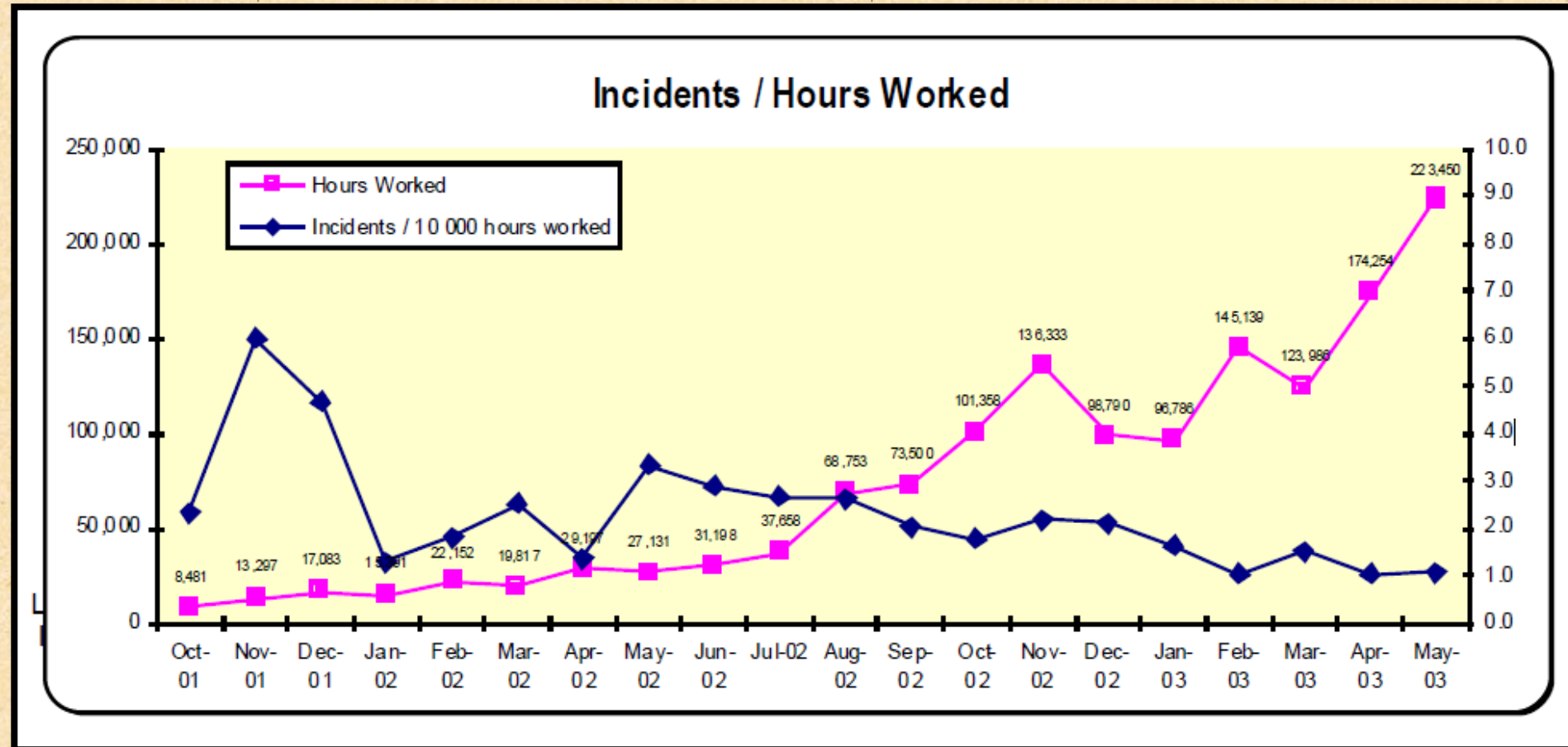
Rio Tinto's Hail Creek Coal (2001-3)

Main Contractor: Hatch Associates



Innovations in seeking to provide an incident and injury free workplace during construction of the Hail Creek Coal Project

**Graham Morgan,
Project Manager
Hatch Associates**



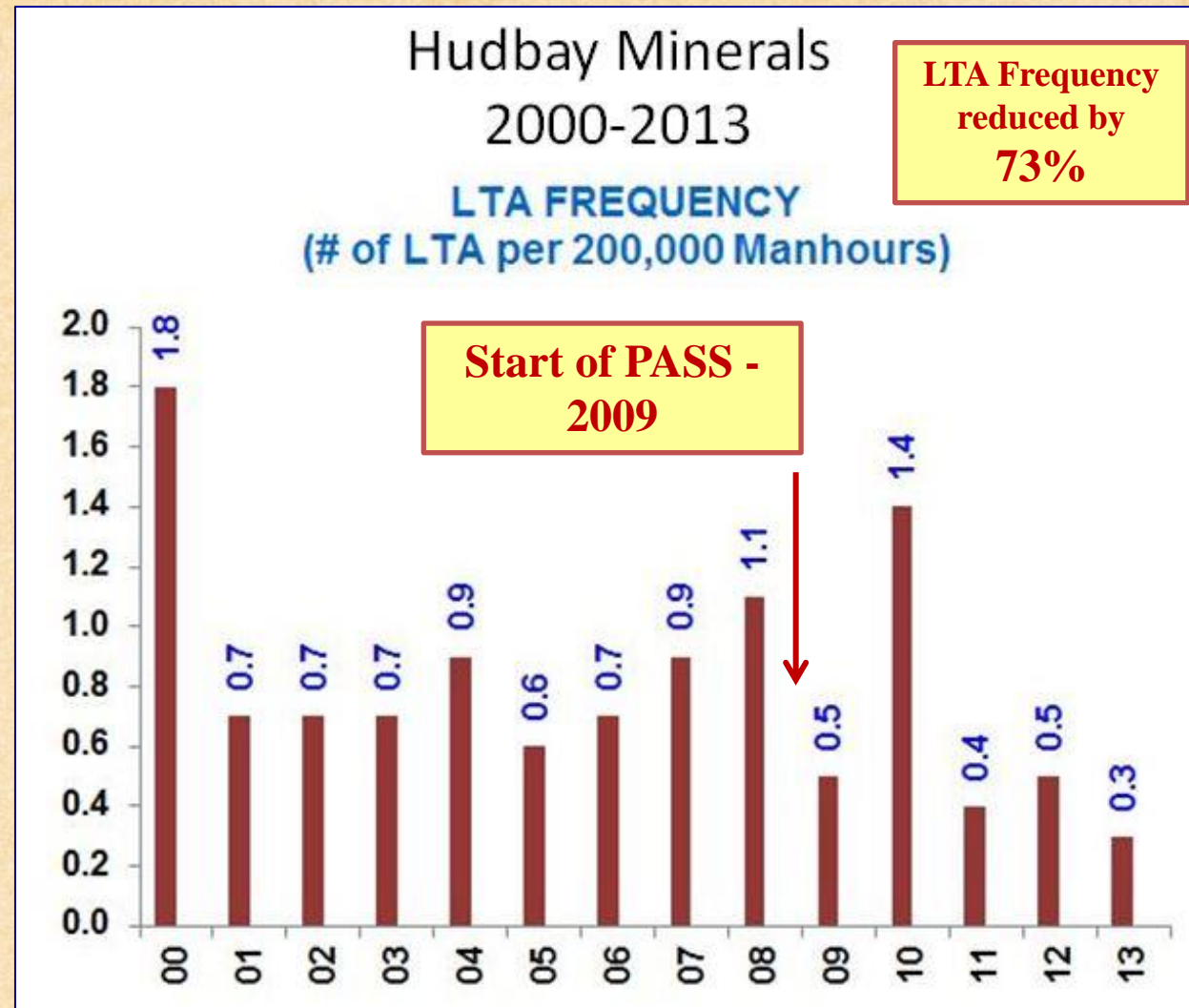
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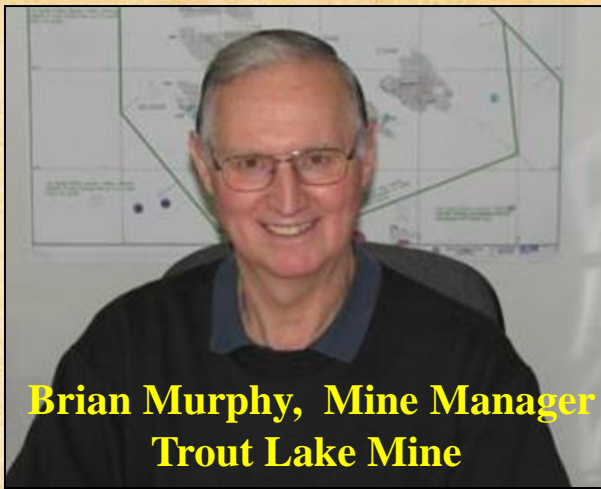
Flin Flon Operations



Snow Lake Mine



Hudbay Minerals has achieved a significant improvement in their safety performance since 2009 and each year continues to be a record year in Safety for the organization. Overall, a 73% improvement in their LTA Frequency has been achieved (1.1 to 0.3)!



**Brian Murphy, Mine Manager
Trout Lake Mine**

**Hudson Bay Mining and Smelting Co.,
Limited located in Flin Flon, MB, Canada,
owned by Hud Bay Minerals**

Best Safety Record in their 80 year history

Brian initially thought PASS was too simple to work, however, later he realized that it is the simplicity of the PASS System that makes it so effective. Brian said “It is great to see the mining crews having a conversation around Safety prior to going to work underground. They are definitely starting their shift with a more Positive Attitude around Safety and the work they have planned to get done.”

The Snow Lake Mine has not had a lost time accident since implementing PASS in 2009 and the overall Organization has the best Safety Record in their History

Xstrata Nickel's Nickel Rim South Mine



April 2009, Achieved the milestone of 5M hours LTA Free

Sudbury, Ontario, Canada

"This is a remarkable accomplishment as health and safety performance exceeded shaft sinking targets and industry benchmarks, demonstrating that safety and productivity go hand-in-hand,"

said Ian Pearce, CEO of Xstrata Nickel



PASS was Utilized for the last years of the Project and being used by the Operation



Nickel Rim South: Construction with Cementation



Xstrata Nickel today announced the completion of the Main **Production Shaft** at its Nickel Rim South Project (depth of 1,735 metres or 5,200 feet) and was sunk without a lost time injury over the course of 30 months. Jan 2008 Sudbury, ON, Canada



This follows the completion of the **Vent Shaft** in May 2007, (Depth of 1,675 Meter or 5,025 feet – \$150M) which achieved the same safety record, for a combined 3.7 years, or 926,000 effort hours, without a lost time injury.

Glencore's Nickel Rim South Project and Mine



HATCH

Our Expertise Projects Careers About Us

English

Nickel Rim South
Xstrata Nickel | Canada | 2003-2010

1.25 million tpa	Under budget and on schedule	5.7 million work-hours with 0 LTIs	C\$925 million (Phase 1 and 2)
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NRS is Client of PASS since 2007 and is a 'Showcase' for Canada

Rio Tinto's Diavik's Mine (200 kilometres south of the Arctic Circle - Canada)



Summertime

Rio Tinto's Diavik's Mine (2006)



**Achieved 18 Months without
a Lost Time Accident**



Safety Huddle for the Underground Crews

Xstrata Copper's Kidd Mine Wins the John T. Ryan Safety Trophy



Two Years in a Row!



The Kidd Mine (Timmins, ON) received the Ryan Trophy for the lowest injury Frequency in Underground Metal Mines in Ontario for 2009

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We addressed these issues with some of Canada's top executives in the energy, resource and packaging industries – to name a few.



We spoke with the General Manager of Kidd Mine about their safety system at Xstrata Copper's Kidd Mine located in Timmins, Ontario

Mine in 2006. Tom Semadeni, General Manager of Kidd Mine was with Falconbridge for 20 years, and became the General Manager at the mine in 2007. Semadeni is also responsible for Xstrata's Canadian Exploration program.

Currently, the Mine employs 550 people full time, and also uses about 450 outside contractors.

Semadeni has good reason to mention the Mine's safety rating: "In the last 27 of 35 years, Kidd Mine has won either a provincial or national safety award, for a total of 50 awards won in Canada in 35 years. In 2007, we achieved a 40% reduction in disabling injuries relative to 2006, and this year we've achieved a 90% reduction in these injuries when compared to 2007. I'd say that's a testament to how safe we are."

"Kidd Mine is a leader in safety performance."

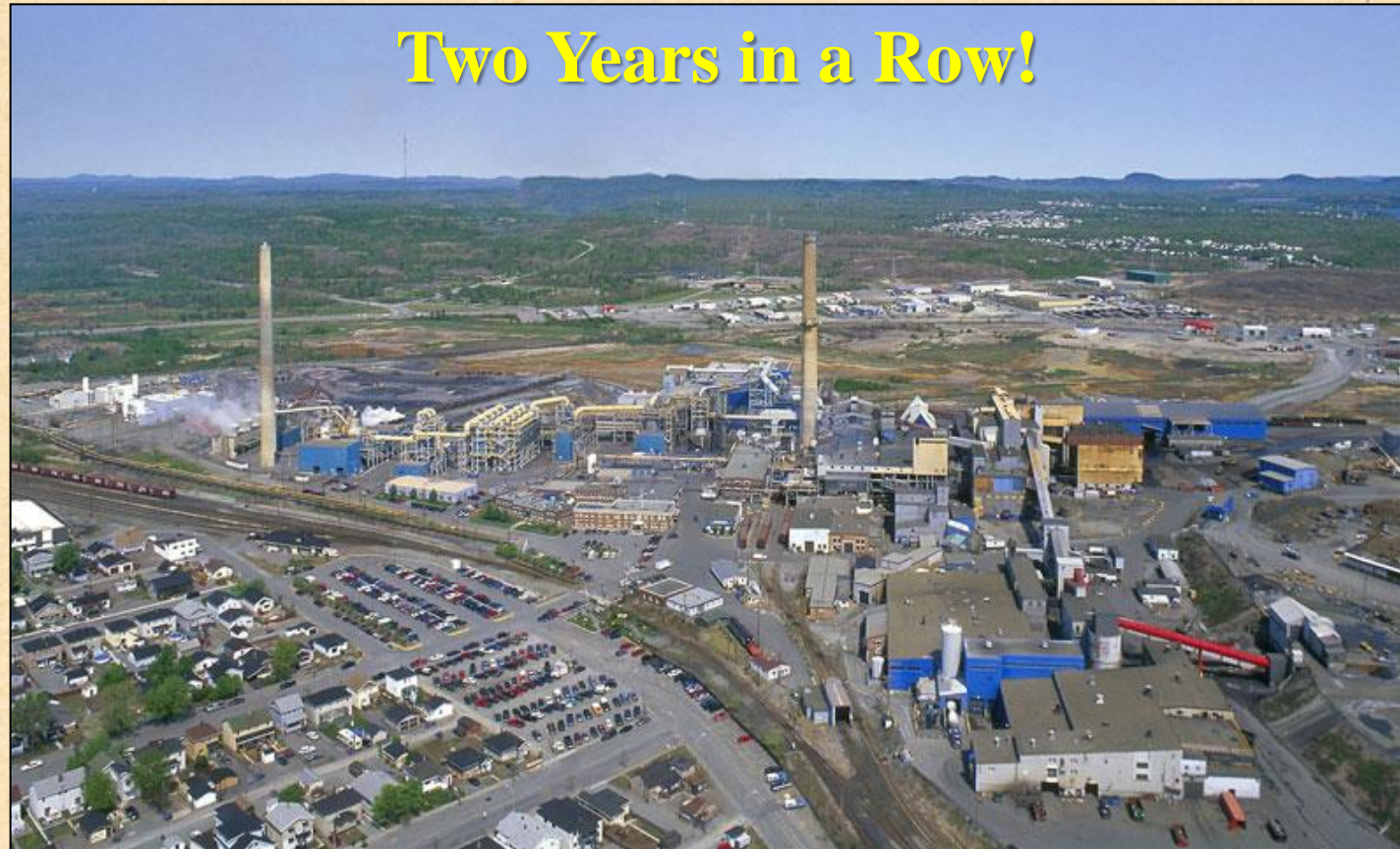
The company also uses a safety model called PASS – the Positive Attitude Safety System (see aside). The System was started in Australia but quickly became popular with Canadian companies. The general idea behind PASS is that everyone on the floor, from mine management to contractors to miners themselves monitor,

moderate, and inform each other of safety practices. Everyone is responsible to everyone else – much like a firefighter's system. "PASS is a bottom-up system, it's not an imposed system and employees are empowered to take care of themselves, and of their coworkers. The employees structure meetings every day and discuss what they did well in terms of safety the day before, what they

Xstrata Copper Horne Smelter Wins the FJ O'Connell Trophy



Two Years in a Row!



June 2010, the Horne Smelter in Rouyn-Noranda, QC received the FJ O'Connell trophy for achieving the best improved record in Safety in the Surface Operation, Transportation and first Metal Transformation Category

In September 2015, the Horne Smelter set a Safety Record by achieving FIVE Years without a 'Compensable Accident'



This Glencore Operation, located in Rouyn-Noranda, Québec Canada, has completed over 7.5 million Consecutive hours without a Compensable Accident (Lost Time Accident)



This includes Five Work Teams that have completed 10 years without a Compensable Accident!

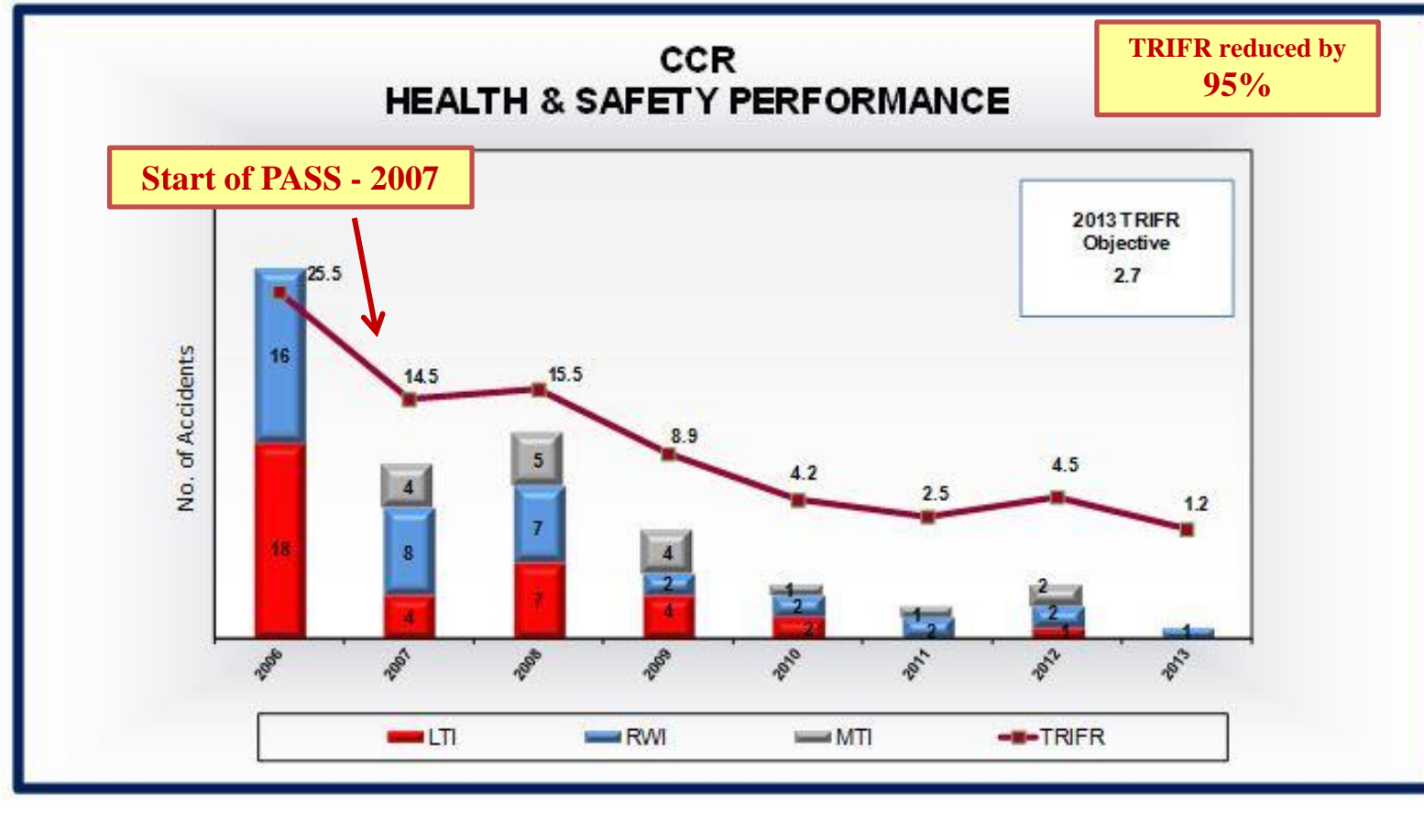
They have been benefiting from PASS since 2007



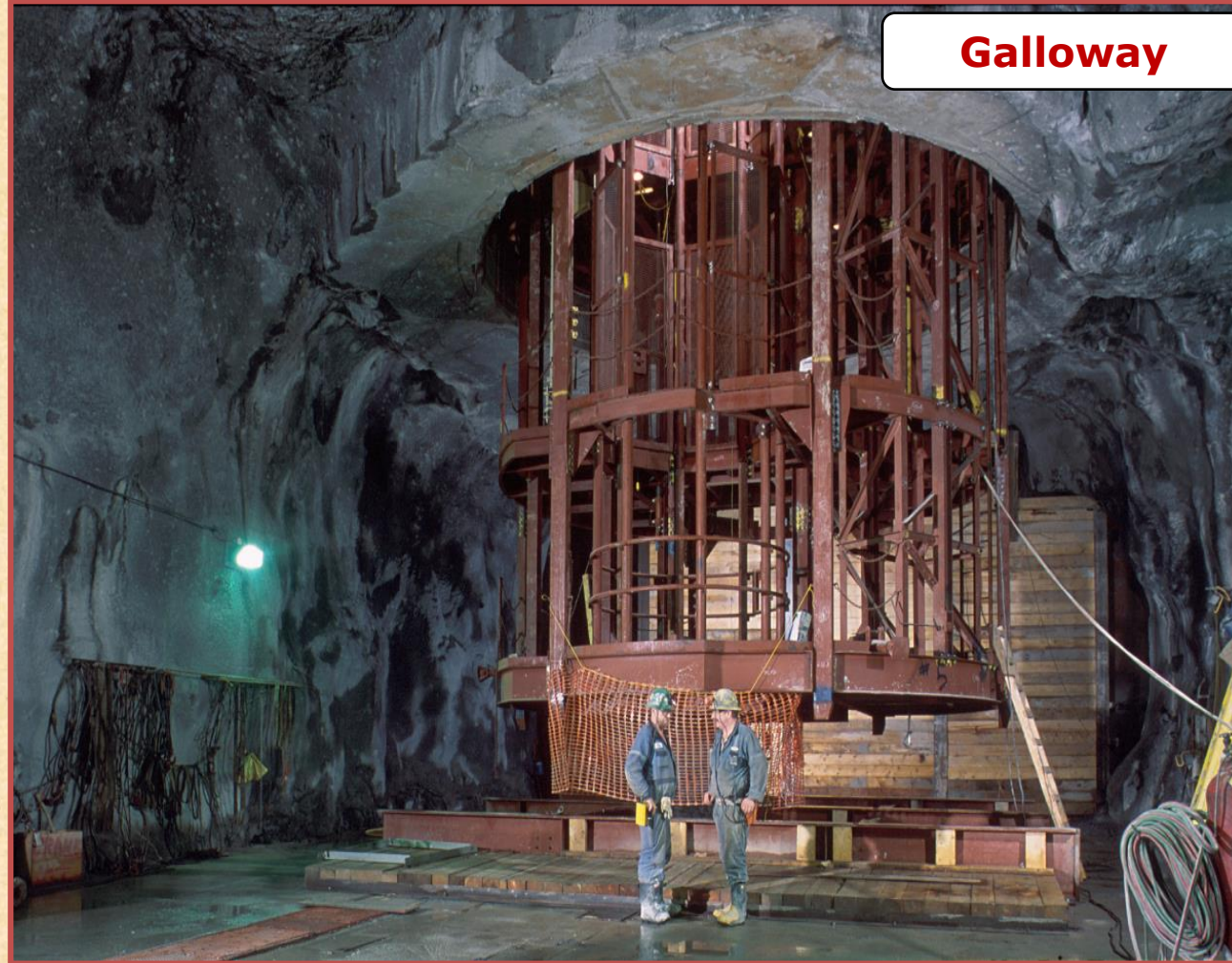
Xstrata Copper's CCR Montreal, Canada (550 Employees)



CCR HEALTH & SAFETY PERFORMANCE SEPTEMBER 2013



CCR has achieved tremendous results in improving their safety performance and one indication of this was the reduction of their TRIFR (Total Recordable Injury Frequency Rate) by 95% (25.5 to 1.2).



PASS is being utilized at:
Diavik Diamond Mine, Coleman Shaft, Resolution Copper, Totten Mine, Afton Project and Nickel Rim South

Shaft Sinking - Off to Work!



**Achieved Four Years without
a Lost Time Accident
(April 2010)**



Resolution Copper Wins Sentinels of Safety Award



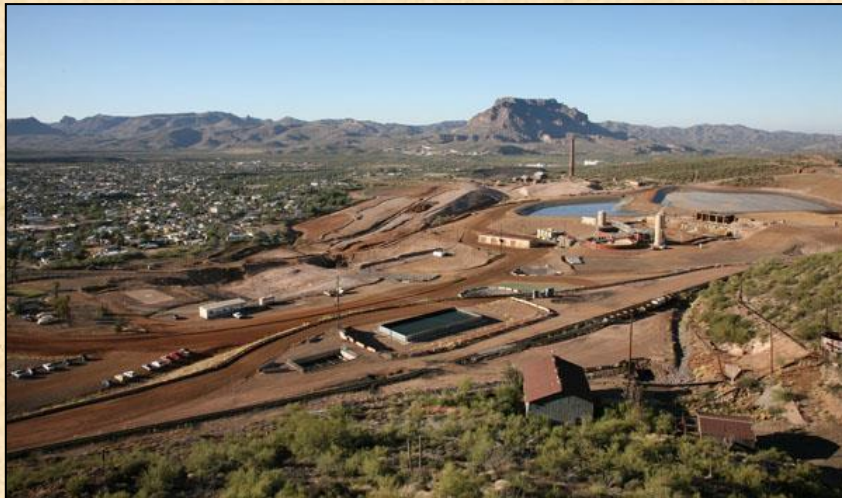
The Department of Labor's Mine Safety and Health Administration MSHA and the National Mining Association (NMA) has honored Resolution Copper with a Sentinels of Safety award in the Small Underground Metals category.



The Sentinels of Safety is the most recognized, longest-standing award given for occupational safety and is awarded annually to mining operations in various operational categories.

To qualify, the company worked over 52,000 man-hours in 2008 without a lost time injury. Resolution Copper was also recognized by MSHA in 2006 and 2007 with a Sentinels of Safety Certificate of Achievement in Safety for its outstanding safety record.

"This award reflects the way our Staff has embraced being a culture committed to safety, and we're very proud of our employees' collective achievement,"
said Resolution Copper President and CEO David Salisbury

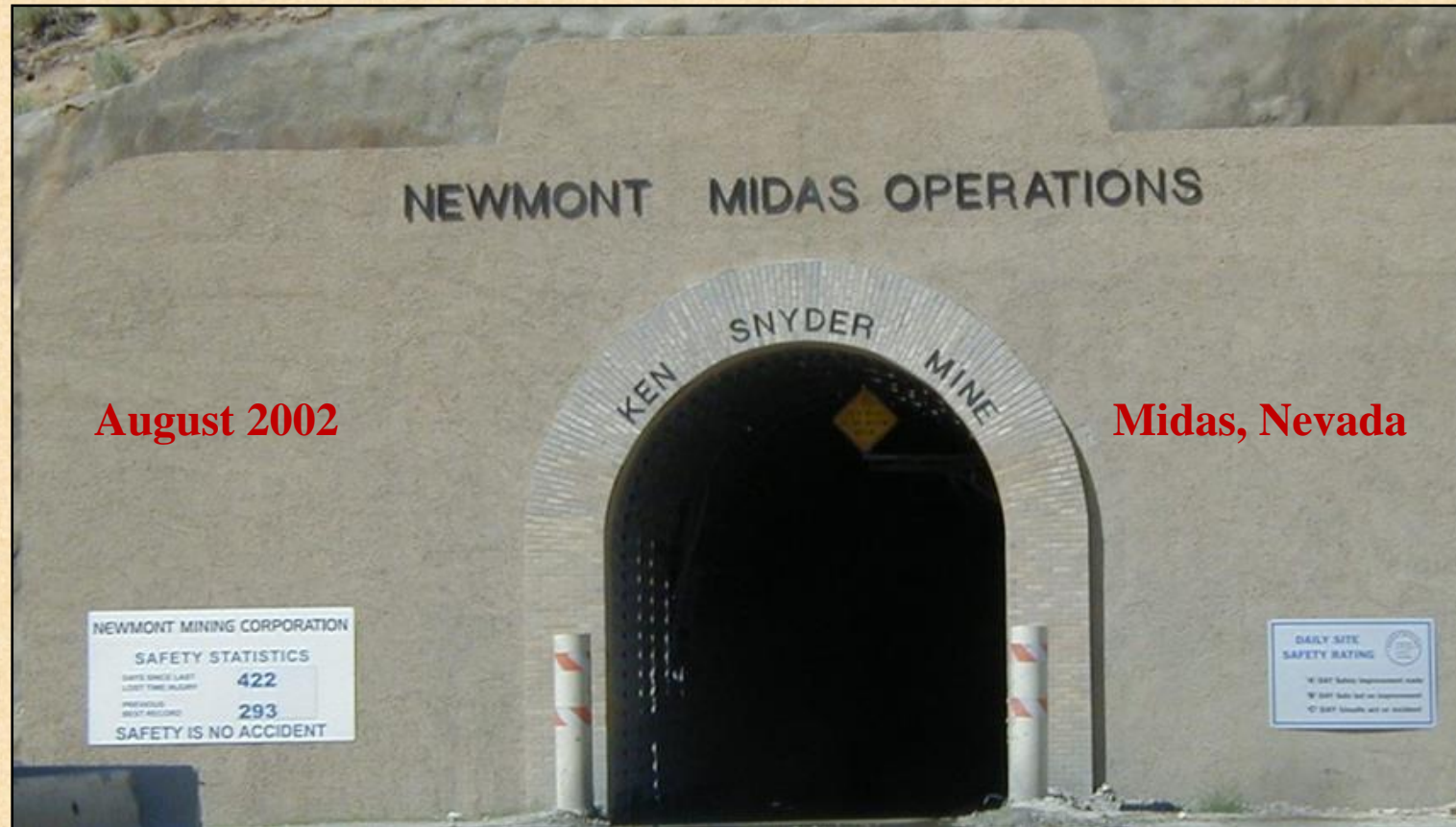


Resolution Copper was formally recognized at a banquet hosted by the NMA in Washington, DC on October 28.

Results at Midas Operation



Two Fatalities, one in 1999 and another in 2000



August 2002

Midas, Nevada

**The Underground Operations: No LTA's from
June 21, 2001 to January 2005 (3 1/2 years)**

Stopped PASS in 2006 and had a Fatality that year



KMC Mining Reaches a new Safety Milestone

2 Million Hours without a Lost Time Incident!!

PASS was implemented in 2002, and since that time KMC has been awarded the Suncor President's Operating Excellence Award; they achieved a milestone of one million hours worked without a lost-time incident; and just recently achieved 2 million hours without a lost time incident. This achievement is a testament to their employees' continued focus on Safety and the Leadership of their management.

Kinleith Log Yard goes 600,000 hours Incident Free



August, 2004, the Log Yard reached an incredible
600,000 hours incident free.
(handling 9,194,980 tonnes of logs)

Their Last Incident was in
June 2001

In September 2004, CHH presented a **Gold Safety Award** to the Manager, Rich Nelson, of the Log Yard, his staff and the following contractors:

**Pedersen Holdings Ltd., Kinleith Log Stackers,
Quality Marshalling and the Follas Group.**



And a Cake!!

We made **5 years** without an LTI on 19th June 2006. For the record, we have worked some **800,000 Hours** and handled **13+ tons** of wood



Kinleith Log Yard Management Team



Rich Nelson
Operations Manager

“I want to thank you for making all this possible through PASS. If there is one thing in my life that I will look back on with a great deal of pride, this is it. Knowing that for five years, everybody I worked with went home safely to their families. It is a great thought.”

He is all about Positive Visible Leadership



Ernest Henry Mining presented with AusIMM Safety Award

Ernest Henry Mining (MIM) was presented with the inaugural Occupational Health & Safety Award by The Australasian Institute of Mining and Metallurgy (June 2002).

“The Ernest Henry team has created an excellent safety and health management culture by engaging and involving the whole work-force and empowering them to manage safety and health hazards as they work. The resultant positive impact on attitude and behaviour is evident and notable.”

This was achieved through the leadership of the GM, Barry Grant, who has also successfully implemented the PASS Process at Weipa Mine, Gladstone Smelter Expansion Project and the Century Mine.





Australian MINEX Award: Century Mine (Rio Tinto)

Pasminco's Century Mine has been awarded the Australian mineral industry's highest accolade for Safety and Health Excellence for 2002.

“Century was recognised for its strong leadership commitment, excellence in implementing comprehensive management systems, and for its highly successful recruitment process that embodies a culture of continuous improvement in safety and health”



Minerals Council of Australia president and retired Managing Director of Rio Tinto Australia, Barry Cusack said.



MINEX Award Acceptance Speech

by David Rose, GM Century Mine



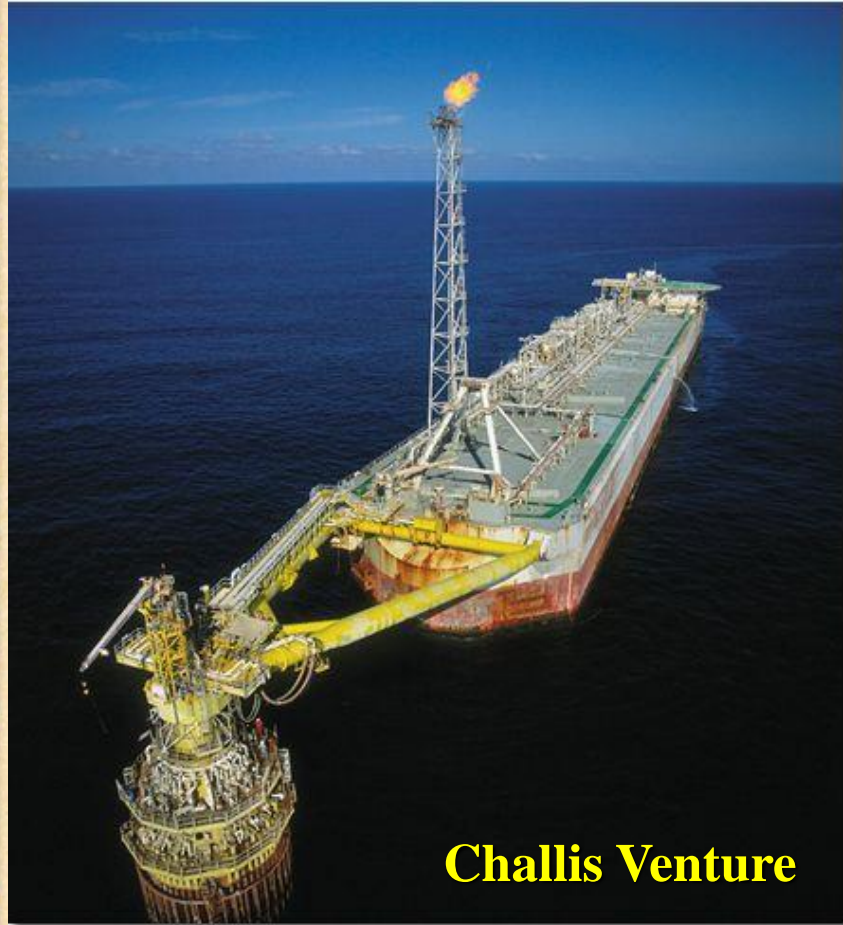
“The other observation I would like to make is the importance that the Positive Attitude Safety System (or PASS) has had to our Safety performance.”



“The PASS meeting process was kicked off from day one by Ian Williams, the father of the Century project, when the Century team was no more than a handful of people in Brisbane office. As the project grew PASS was introduced to all employees and contractors, bar none.”

“Today we run 60 PASS meetings per day. In many respects it is the glue that holds everything else together, engaging all employees in safety daily.”

BHP's FPSOs Timor Sea



Challis Venture

**Located on the Equator between
Darwin & Timor (Indonesia)**

**Three Facilities (FPSO) &
Insured for Two Billion Dollars**

**Contains up to 800,000 Barrels
and 1st & 2nd Stage Upgrader**



Skua Venture

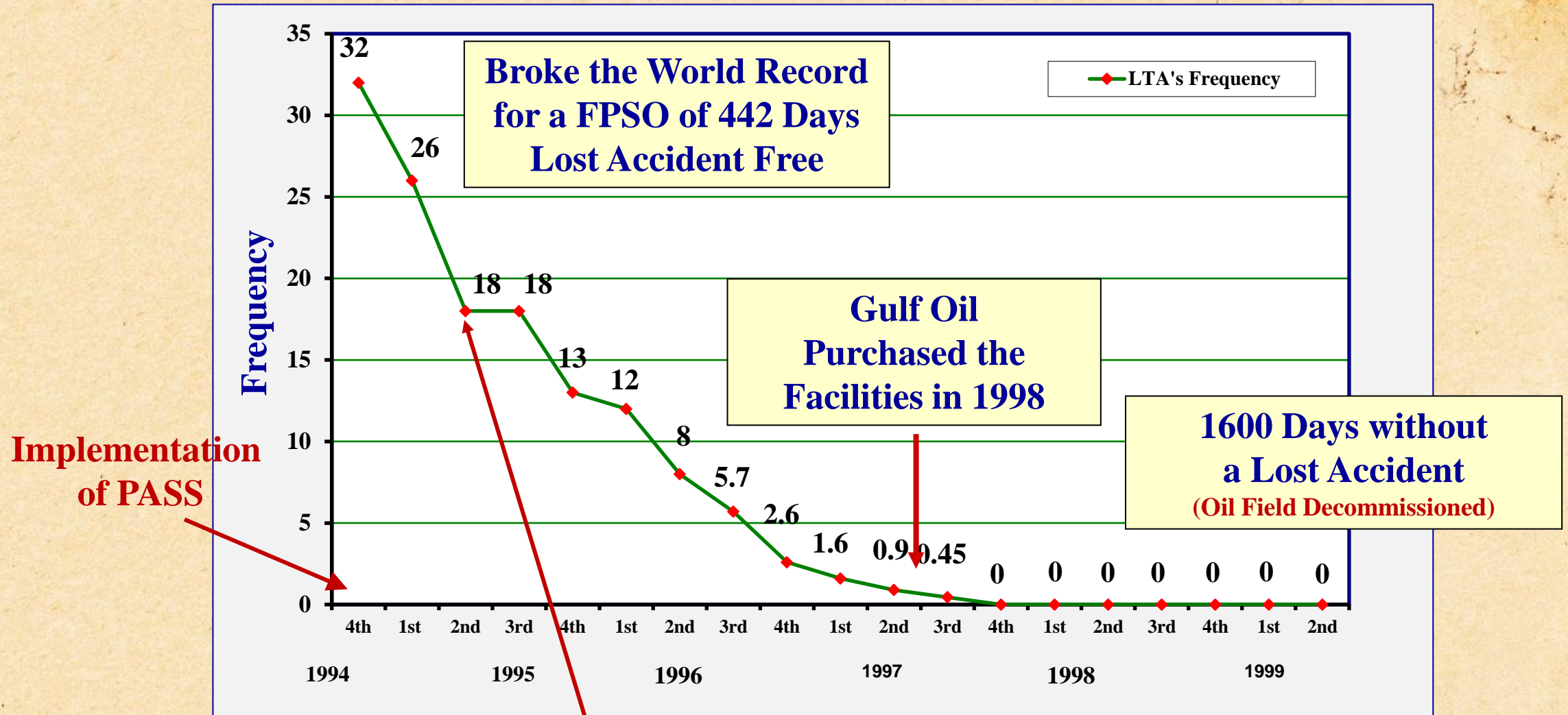


Jabiru Venture

**Manned by the Maritime Union of Australia; Two swings of 50 men on each ship
(approximately 300 contractors); 28 Days on and 28 days off; and 12 hour shifts**

Frequency at BHP Petroleum

Timor Sea Operations: Three Off-Shore Oil Facilities



Only One Lost Time (Skua Venture)

They broke the World record of 442 Days



Challis Venture: 2 YEARS LTA Free



**Review of the Management of Safety in
the Offshore Operations of BHP Petroleum
for the Federal Government (Senator Warick Parer),
Western Australia (Mike Reed) and
Northern Territory (Kevin Minson) Ministers for Resources
and Energy (1996) by...**

**Dr. Tony Barrell, Chief Executive of North Sea Safety
in the United Kingdom, Health and Safety Executive and Chairman,
British Airports Authority**

**Sir Tony Barrell (Knighthood) is considered the World's Leading Safety Expert and
is accredited with the development of the Petroleum Safety System known as
"Safety Cases."**

**"The company is using imaginative ways to increase employees' involvement in
health and safety management. An example is the Positive Attitude Safety
System (PASS) which I saw in action and which has obviously engaged the
interest and enthusiasm of the crews."** Chapter 4: Organizing

LTA's at BHP New Zealand Transport (5 Operations)



**Operations in Mount Maunganui,
Napier, Auckland, Bluff and Lyttleton**

**130 Unionized Stevedores
(Longshoremen)**

**A Rolling Average of
11 LTA's Per Year**

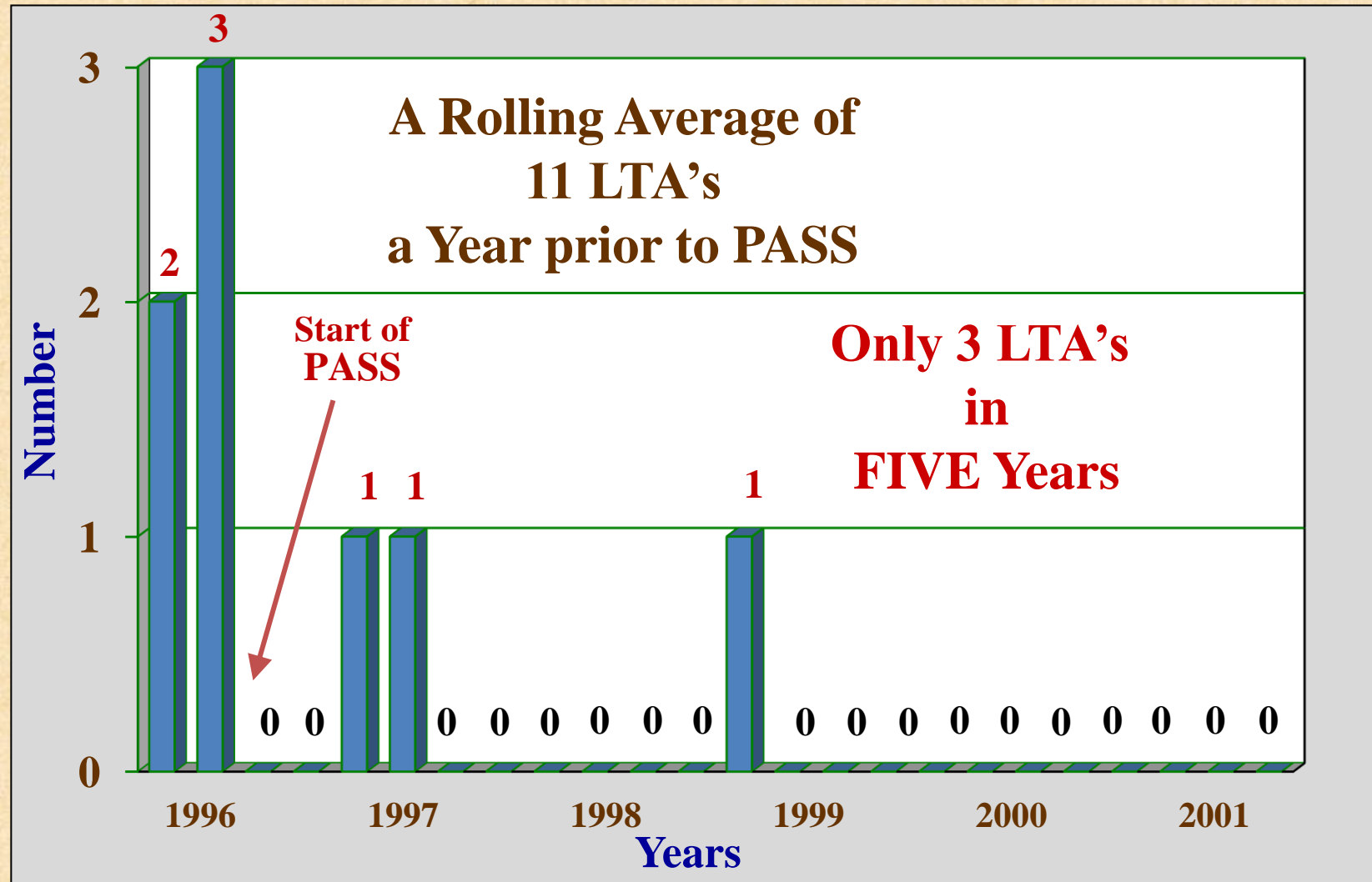
**The year before implementing PASS (1995) they had
Two Separate Accidents Resulted in Fatalities**

LTA's at BHP New Zealand Transport

130 Stevedores/Longshoremen



**Two Separate Accidents
Resulted in Fatalities in 1995**





The Shed



600 Trucks

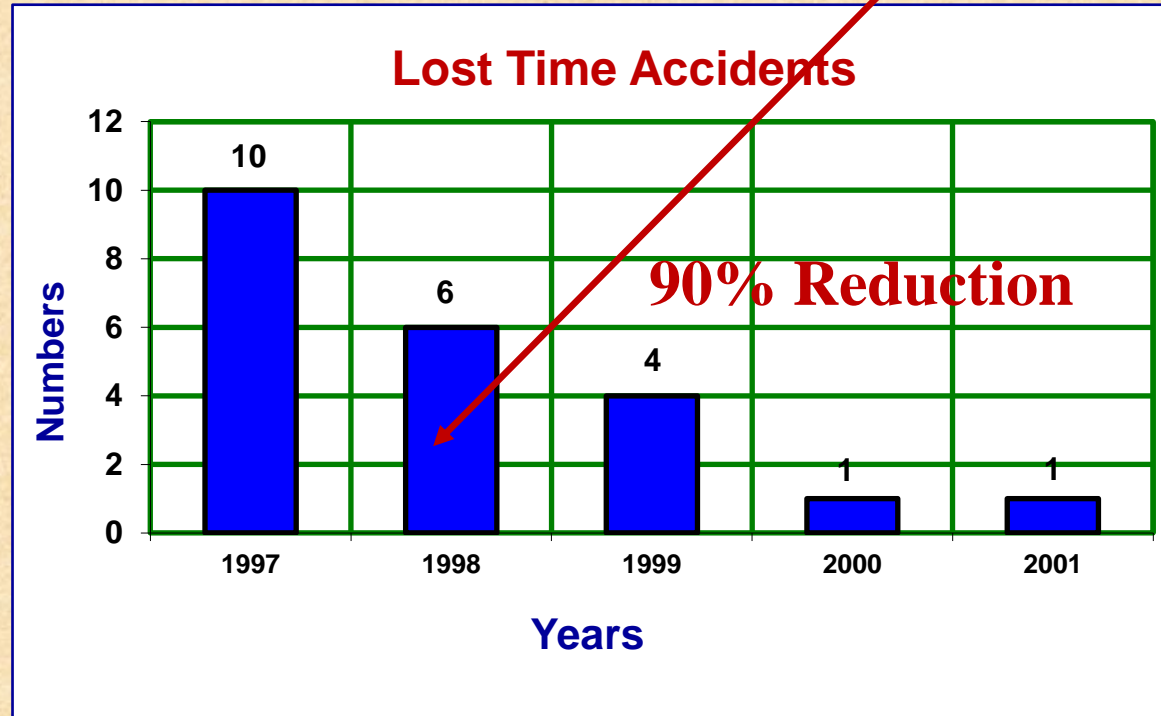


**Results at
Tranz Link's Shed Auckland, NZ**
**(up to 120 Permanent & Casual Workers,
Central Rail Line and 600 Trucks)**

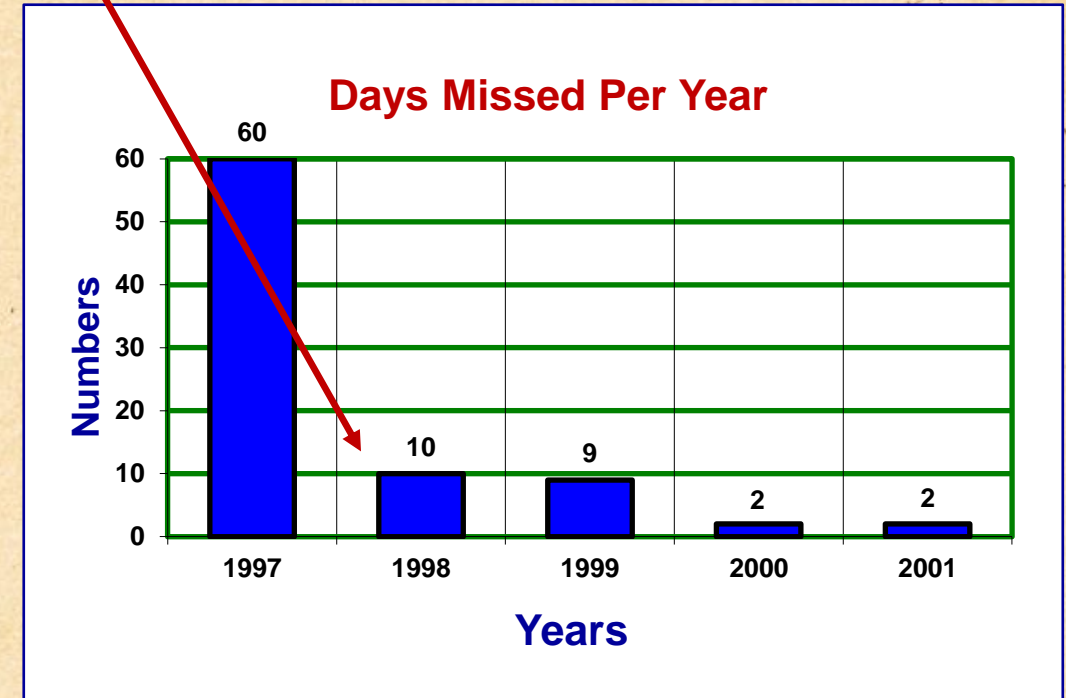


Steel Yard Team

Implementation of PASS (1998)



**Safety Record without an
LTA: 268 Days**
(before PASS, best was 71 Days)



Severity: dropped 66%
(from 6 to 2 days missed per Lost Time)

Carter Holt Harvey, Fibre Forest Solutions

(North & Central Districts, New Zealand)

Owned by International Paper (Louisiana, USA)



CHH only uses external Key Suppliers (contractors) for all their Harvesting Logging) Operations

About 900 bushmen (Loggers) in 61 crews working for 13 Key Suppliers (Sinton & Olsen the largest)

All the crews but one, adopted the Safety Huddles (PASS)

PASS was implemented over a 10 month period



During these 10 months they had **Five Fatalities**

However, **No Crews** using PASS had a Fatality!

CHH's Two Main Key Suppliers (Tokoroa, NZ)

Goal: to go One Year with **ONLY** One Fatality

Sinton Logging

About 120 Bushmen in 9 Bush Gangs

One Year (July 2002)
Lost Time Accident Free



Olsen Logging

80 Bushmen in 5 Bush Gangs
Just Over 11 Months (2002)
Lost Time Accident Free

And Never a Fatality
within a PASS Bush Gang
(Started PASS October 2000 - 2006)