

Submission To Alberta Royalty Review Panel

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Representing:
NACE International
Corrpro Canada Inc.

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PROPOSAL

“Consideration is requested for oil/gas royalty credit incentives to encourage increased use of corrosion control measures”



AFFILIATION

- NACE International
 - Largest world-wide corrosion non-profit engineering/technical society
 - Membership of 17,000+
 - Based in Houston, Texas.
- Corrpro Canada Inc.
 - Canadian Head Office in Edmonton
 - Subsidiary of Corrpro Companies Inc., the world's largest supplier of corrosion-related engineering and installations services.



BACKGROUND

- “Corrosion” is not seen as any big issue to the outside world.
- Only time it ever gets into the media is when there is a catastrophic failure, usually leading to either damage to the environment or issues involving public safety.
e.g. 2006 BP pipeline failure in Alaska.

BACKGROUND

- Corrosion is a natural process, which follows the natural laws of chemistry and physics.
- Many methods of controlling and monitoring this corrosion, which is not the purpose of this submission.
- The purpose is to demonstrate how corrosion is a significant economic factor in the production and transportation of petrochemical products.

BACKGROUND

ANNUAL COST OF CORROSION TO ECONOMY		
YEAR	STUDY	COST OF CORROSION
1950	Uhlig	2.1% of GDP of USA
1970	UK Study	3.5% of GDP of UK
1974	Japanese Study	2.0% of GDP
1975	Battelle	4.0% of GDP (USA)
1995	Battelle (update)	~\$300 Billion

BACKGROUND

“The Cost of Corrosion” Study

- Funded by the US Federal Highway Administration
- Under the supervision and administration of NACE International
- Conducted over the period 1999-2001, and released in 2002.

BACKGROUND

Conclusions :

- The **annual corrosion cost** to the US economy was \$276 Billion
- 3.1% of the US gross domestic product.
- Corrosion cost to the US economy is **15 times more** than the average annual costs of all the natural disasters (hurricanes, tornadoes, floods, fires, etc) combined.
- Also concluded that approximately 25%-30% of these costs could be saved using existing corrosion control science and technology.

PROPOSED LEGISLATION IN THE UNITED STATES CONGRESS

H.R. 1770

The Corrosion Prevention Act of 2007

“To amend the Internal Revenue Code of 1986 to encourage the use of corrosion prevention and mitigation measures in the construction and maintenance of business properties”

- Proposes federal tax credits for certain types of expenditures on procedures for controlling corrosion of their assets.
- Proposed legislation is now in the “committee” stage where the logistics of “how would this work” are being debated.

PRODUCTION PIPELINES

There are many standards and/or regulations dealing with the safe operation of pipelines. A small sample includes:

- Canadian Gas Association, “Recommended Practice OCC-1-2005, Control of External Corrosion on Buried or Submerged Metallic Piping Systems”, December 1, 2005
- Alberta Energy Utilities Board, “Pipeline Inspection Manual”, November 2001
- NACE International Standard RP0169-2002, “Control of External Corrosion on Underground or Submerged Metallic Pipeline Systems”, 2002
- Many Others

PRODUCTION PIPELINES

PRODUCT	No. of Lines	Total Length (km)
Crude Oil	4,812	18,019
Natural Gas	136,023	235,592
Sour Gas	8,244	20,168
Salt/Produced Water	13,212	14,403
Oil Well Effluent	57,790	50,977
Fuel Gas	7,493	12,839
Other	3,736	18,807
TOTALS	231,310	370,805

From the Energy Utilities Board Report "2007A - Pipeline Performance in Alberta 1990-2005" the statistics on production/gathering pipelines are :

PRODUCTION PIPELINES

Since 2000, the leaks due to corrosion are :

Pipeline Failures Due to Corrosion

	2000	2001	2002	2003	2004	2005
Internal Corrosion	534	454	405	347	352	392
External Corrosion	81	78	109	86	124	108
TOTAL FAILURES	615	532	514	433	476	500

PRODUCTION PIPELINES

- Some of these pipelines go back 50+ years and are still operating safely.
- Track record is very good, and is due to, in general, effective corrosion control measures being taken by the owners.
- The ideal is to have no corrosion failures. This is an unrealistic and unaffordable operating regime for oil and gas producers.

OIL/GAS PRODUCTION WELLS

- Approximately operating 279,000 oil/gas wells in Alberta.
- From a corrosion control perspective, a well casing is simply a vertical pipeline
- Over the past five (5) years, according to EUB records, there has been an average of less than 275 corrosion failures per year in production wells.
- Put another way, this means that 99.90% of these wells are trouble-free, from a corrosion perspective, each year.

OIL/GAS PRODUCTION WELLS

- Different corrosion control methods are employed in oil/gas production wells, as the corrosive conditions both internally and externally, change.
- Internally, corrosion inhibitors are utilized.
- Externally, where there is a corrosive zone, cathodic protection is effective.
- Down-hole inspection tools can be used to detect whether corrosion, either internal or external, is occurring.
- When a well casing failure does occur, it is an extremely expensive proposition for the owner of the well, usually rehabilitated with a “cement squeeze”.

LIQUID STORAGE TANKS

- Internal corrosion is controlled usually with the application of protective coatings.
- External corrosion where the tank contacts the ground, controlled by the application of cathodic protection.
- In new construction, some regulations defining “secondary containment”.

SO HOW CAN THIS RELATE TO ALBERTA OIL/GAS ROYALTIES?

- In Alberta, the existing legislation and standard practice are consistent with, and in many instances exceed, legislation and standard practice in other jurisdictions worldwide.
- More restrictive corrosion control legislation is not required nor recommended in this submission.
- It is reality that in oil/gas production, to operate totally risk-free, from a corrosion perspective, is impossible.

SO HOW CAN THIS RELATE TO ALBERTA OIL/GAS ROYALTIES?

- We propose royalty credit incentives for oil/gas producers to raise the bar on corrosion control even higher.
- What is proposed here is a concept, the formula to be finalized after significant study.
- Obviously, oil/gas producers would not, and should not, be rewarded for abiding by existing legislation.

SO HOW CAN THIS RELATE TO ALBERTA OIL/GAS ROYALTIES?

- This concept is about “raising the bar”.
- The significant task is in the definition of “What constitutes raising the bar?”.
- Work on this aspect is currently being carried out by committee study in the US, the principles of which could be applied here.

**THIS WOULD NOT BE A FREE RIDE
FOR OIL/GAS PRODUCERS**

SO HOW CAN THIS RELATE TO ALBERTA OIL/GAS ROYALTIES?

- Where an oil/gas producer chooses to “raise their own bar”, there are definitely increased costs. Part of these increased costs could be recovered through the proposed oil/gas royalty credits.
- This a win-win situation for both the oil/gas producers in Alberta and the people of Alberta. Over the long term, the oil/gas producer decreases operating costs due to corrosion issues, and over the long term, protection of the environment and public safety are increased.

Conclusion of Submission To Alberta Royalty Review Panel

Respectfully submitted,
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On behalf of:

NACE International
Corrpro Canada Inc.

