

#2

26 September 2008

K J and V Card
20 McFarlanes Road
BERRY PARK NSW 2321

Queensland Hunter Gas Pipeline Submissions
Major Infrastructure Assessments
NSW Department of Planning
GPO Box 39
SYDNEY NSW 2001



Subject: Queensland Hunter Gas Pipeline Risk Submission
Application Reference No.: 06_0286

Attention: Mr Scott Jefferies

Dear Sir,

Following a telephone discussion with your Ms Swati Sharma on Monday 22 September 2008, we, and on behalf of our neighbours, wish to object to the proposed pipeline corridor which cuts across our properties as shown in the attached sketch.

Our reasons for opposing the proposed corridor are:

In 1982 our Newcastle based metallurgical company was requested by the then Federal Government body, The Pipeline Authority (TPA), to investigate the monumental explosion and rupture of the recently constructed and commissioned 1,300 km Moomba to Sydney natural gas pipeline.

This significant event involved a section of approximately 10 metres in length of 864 mm diameter x 8.4 mm wall thickness section of buried steel pipe rupturing, catching fire and exploding out of the ground and "opening up like a carpet" and landing on a sand dune 400 metres from the crater it produced when it blew. Any animals or wildlife in the vicinity which were not killed by the shockwave were burnt to death in an area of approximately 800 metre area. The ensuing fire burnt for about 6 hours with flames up to 200 metres into the night sky and could be seen from Tibooburra 250 kms away. All gas supplies to NSW homes and industries were cut off for a period of approximately 3 days until replacement sections of pipe could be reinstated and gas supplies resumed. This event happened at 2.00 am in the morning in the middle of winter and was located

approximately 4.2 kms from the Santos gas plant at Moomba in north east South Australia. (Refer attached photos of failure site).

With the pipeline only 6 years old it was the youngest pipeline in the world to fail from the condition of "intergranular stress corrosion cracking" which is a world wide problem. Our company spent 15 years investigating and developing strategies to monitor and "risk manage" the problem. Incidentally, I am currently involved with approximately 500 dig ups along the operating gas pipeline to help prevent a recurrence of such a failure. Each dig up costs in the vicinity of \$50,000.00 and will be ongoing.

More extensive and technical details can be provided together with metallurgical samples verifying this event and the ongoing risk management. Also attached is a short history of stress corrosion cracking and the events during the period of rupture and replacement.

Other factors we wish to be considered are:

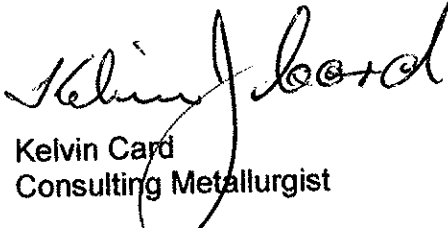
1. The new Thornton North subdivision, which Maitland City Council has approved with up to 10,000 new homes, will be within 150 metres of this pipeline.
2. Maitland City Council has stated it is running out of available flood free land and our property together with our neighbours, Don and Carleen Lean and Civilbuild, will be future residential development land. The intention is to build this pipeline across 2 properties and totally through the Civilbuild property which are within close proximity of the approved subdivision and rules out all this land for any future development.
3. It defies logic why the proposed pipeline corridor which passes through swamp and flood plain prior to crossing Raymond Terrace Road and then changes direction to cross elevated, flood free land (our property and adjoining neighbours property) to then pass from the elevated land back down into flood plain land near Morpeth and the Hunter River.

I have been involved in extensive technical, environmental, metallurgical and engineering aspects on natural gas pipelines over the past 26 years covering pipe manufacture, welding, coating construction and operation of gas pipelines both here and overseas. Having been confronted with a major domestic pipeline failure investigation, I am privy to a wealth of information which up until now has been held by me in the strictest confidence. However, if my property is to be subject to a gas pipeline being constructed through it, and knowing the risk to the general public, my confidentiality will not exist and Maitland City Council and the general public will become well aware of my experience and the facts associated with the hazards of natural gas pipelines.

I am not opposed to the project but am opposed to the planned route of the pipeline close to residential areas and future development areas when other routes are available close by in areas where houses will never be built.

We trust this objection to the pipeline route receives the serious consideration it deserves and that an alternative corridor is made to the area we have nominated. I trust this consideration will also apply to any other areas which may be subject to close proximity of residential or future planned residential areas.

Yours faithfully,



Kelvin Card
Consulting Metallurgist

Summary

Our company was credited at the time of being the first in the world to successfully apply ultrasonic sound waves to detect stress corrosion cracking (SCC) in the Moomba to Sydney gas pipeline and we gained international funding from the United States American Gas Association. This led to research and development of intelligent pigs to detect and monitor cracking in operating pipelines and took many years to develop.

After the failure of the pipeline at Moomba, Professor Parkins from Newcastle Upon Tyne University was consulted. He had at that time spent 30 years studying the worldwide problem of intergranular stress corrosion cracking and recommended urgent replacement of the first 10 Kms of the pipeline from the Santos gas plant to prevent the possibility of another explosion taking out the plant. The Perth – Dampier line was being constructed at that time and ten kilometers of pipe was purchased from them to construct a bypass around the existing pipeline.

I was commissioned to be involved with the circumferential butt welding and the X-ray sentencing of all the welds. This bypass was not allowed to be constructed any closer than 1 km to the existing line due to the likely failure reoccurrence. The bypass was completed over a 4 month period in 1984.

On completion of the bypass, gas was removed from the original 10 Km section and I was given the responsibility of determining the extent and severity of the cracking so that risk management strategies could be implemented. Using 3 battery motorized trolleys fitted with ultrasonic equipment and transducers, Myself and 2 other technicians carried out full ultrasonic examination of the disused pipe in the ground, underground, along the full length of the bypassed 10 Km length of pipeline. The success of this world first inspection system resulted in extensive detection and confirmation of SCC resulting in the replacement of 36 Km of pipeline at a cost of \$23,000,000 at that time.

World wide recognition of our success resulted in significant overseas gas pipeline funding to develop and build an inline intelligent "pig" device to be pushed along by the gas flow and detect crack areas.

This device has only been in commercial operational use over the past 4 years and our company is currently involved with this program of "dig-up" and repair of cracking.

History of Natural Gas Pipeline Involvement

- Moomba/Sydney – 26" bypass, welding and X-ray sentencing.
- Moomba/Sydney – replacement of 30Km 34" pipe, welding and X-ray sentencing.

- Moonie/Jackson gas pipeline – X-ray sentencing all 3 spreads.
- Newcastle/Sydney – oil pipeline.
- Kooragang/ Walsh Island – 10 Kms, X-ray and sentencing.
- Lateral pipelines to Bathurst, Orange, Lithgow – front end welding and X-ray testing.

El Paso Natural Gas Pipelines:

- Trials in two one mile sections of pipeline in Casa Grande, Arizona, USA to detect evidence of stress corrosion cracking in a buried pipeline.
- Extensive involvement in projects developing in line testing devices for American Gas Association for detection of SCC.
- Presentation to Trans Canada Pipelines on detection and testing for SCC in operating pipelines.

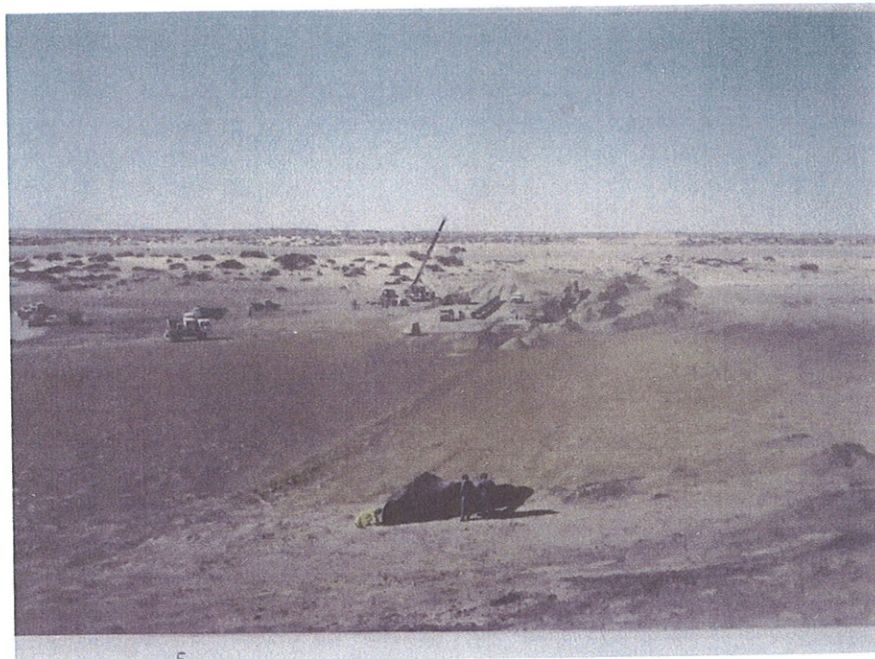
Current involvement:

- Working on approximately 700 dig ups to date in the Moomba/Sydney gas pipeline from Moomba to Bulla Park (west of Cobar, NSW). This involves magnetic particle examination and ultrasonic depth determination and sentencing of SCC, while the pipe is in the operating and pressurized condition. This work is ongoing.
- Involved with the development of an automated ultrasonic mill inspection system to examine sub-sea gas pipelines constructed between Tasmania and Victoria.
- Involved with development of an automated inline ultrasonic inspection system for a pipe mill on the south coast.

Historical Photographs of the 1982 Failure

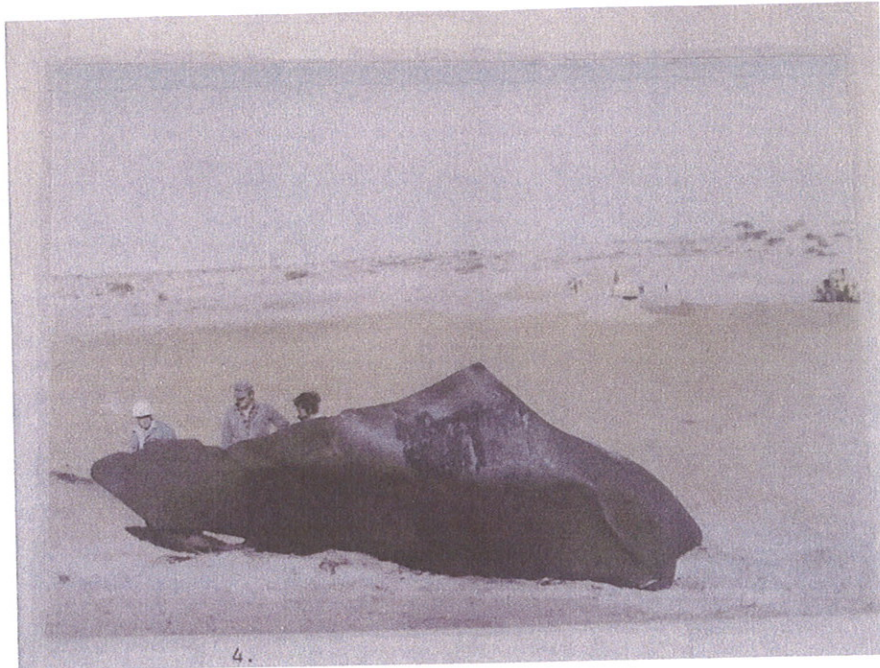


Aerial photograph of the original failure site at MW4.2 at Moomba in 1982 showing scorching of the clay pan and sand dune area for up to a distance of 400 metres from the explosion centre



Section of pipe blown from the failure site 400 metres away caused by intergranular stress corrosion cracking (SCC)

Historical Photographs of the 1982 Failure

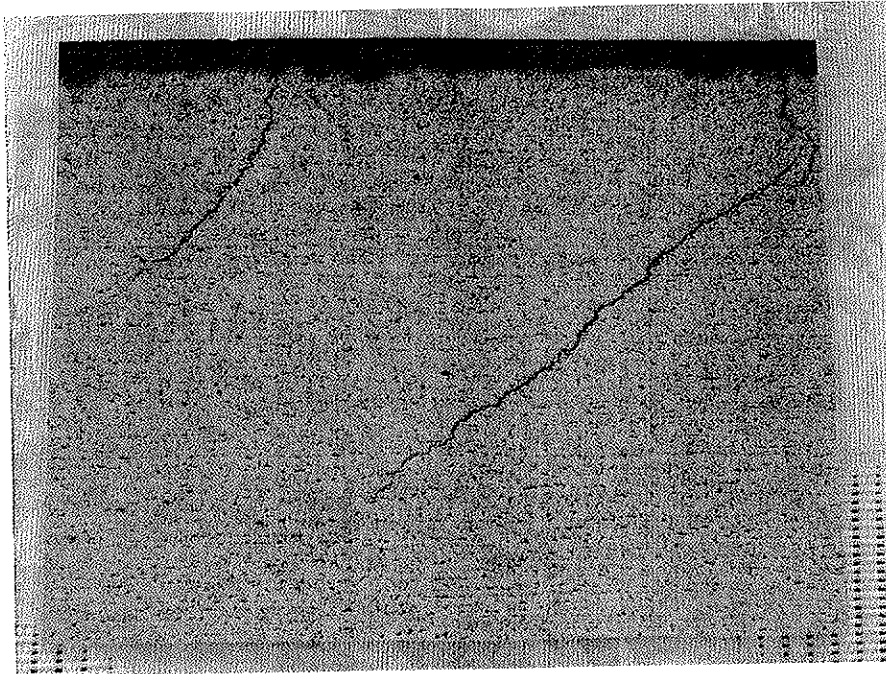


Close up view of the piece of fractured pipe blown out of the ground

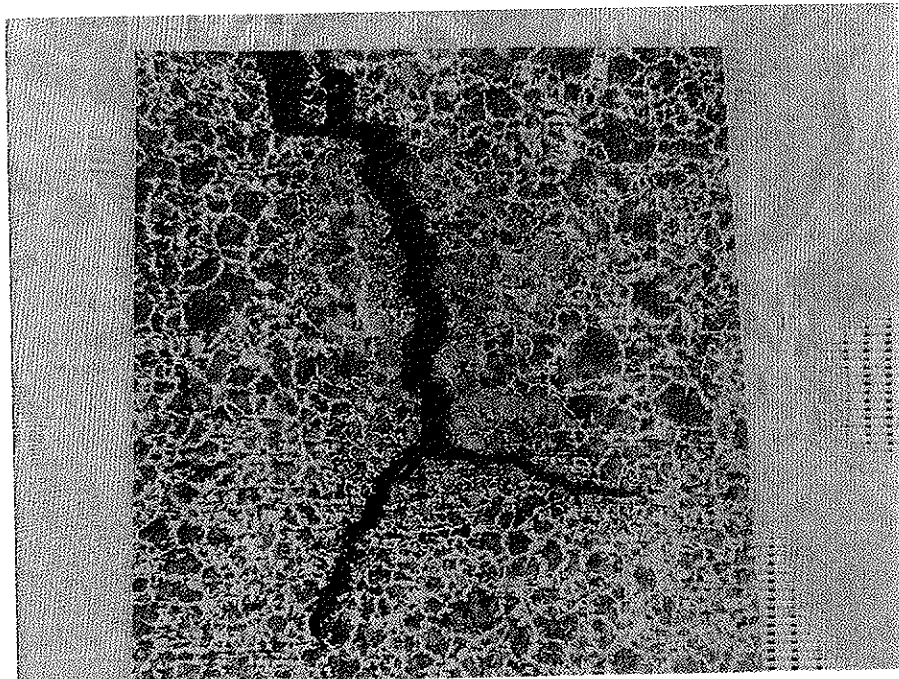


Explosion crater showing the down stream end of the fractured pipe

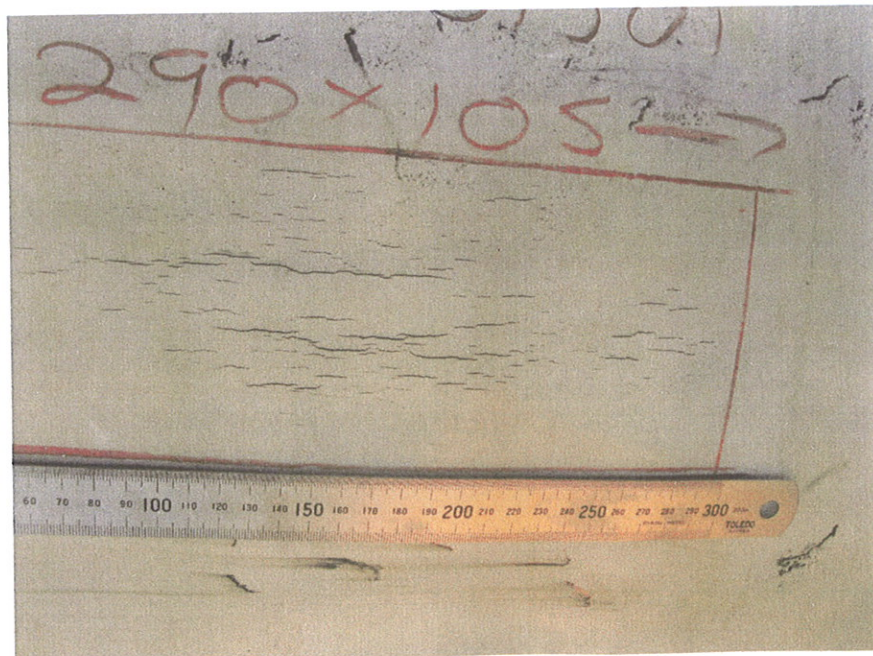
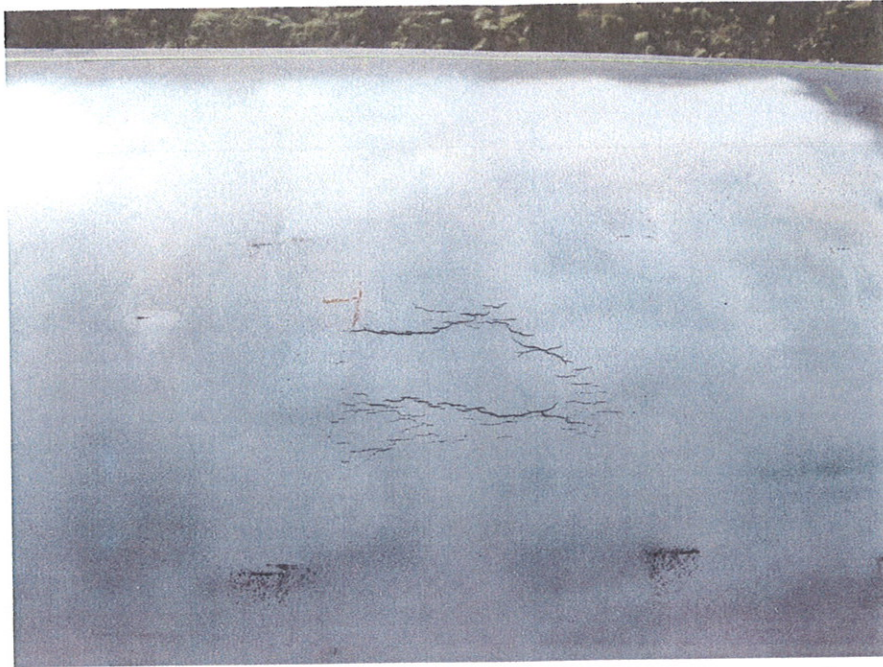
Historical Photographs of the 1982 Failure



Macro photograph showing the typical 45° orientation of SCC in the X65 material pipe from the Moomba pipeline



Micro photograph showing root branching of the intergranular SCC



Photographs showing magnetic particle confirmation
of a colony of SCC after detection by ultrasonic examination