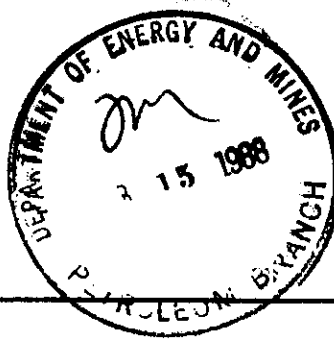


Manitoba

Minister of
Energy and Mines



Room 301
Legislative Building
Winnipeg, Manitoba, CANADA
R3C 0V8

(204) 945-4601

February 9, 1988

Glen M. Findlay
MLA for Virden
132 Legislative Building
Winnipeg, Manitoba
R3C 0V8

Dear Mr. Findlay:

I am pleased to enclose herewith a summary report on the Daly Unit No. 3 reduced spacing project blowout and salt water spill. I understand my colleague, the Honourable Wilson Parasiuk, agreed to send you this report when it was completed.

Yours respectfully,

On _____ by
JERRY STORIE

Jerry Storie
Minister

Enclosure

RA/id

bc: Charles S. Kang
H. Clare Moster

0439M

CHEVRON DALY 6A-12-10-28 (WPM)

The Well

The well, Chevron Daly 6A-12-10-28 (WPM) is the first well in the recently approved reduced spacing project in the Daly Unit No. 3. The well is offset to the northwest and to the southeast by active water injection wells, both of which are approximately 250 metres from the well.

The Incident

While drilling the well on March 7, 1987 at a depth of 681 metres, a "kick" or inflow of fluid to the wellbore was observed. Blowout prevention equipment on the well was immediately shut in. Upon shut in, pressures in the wellbore rapidly exceeded safe limits to ensure wellbore integrity and the company decided to flow the well to relieve pressure. The well was flowed to an on-lease flare pit, but the force of the flow caused the back of the pit to erode away and resulted in a spill of well fluids off the wellsite. The spill fluids flowed in a westerly direction and collected in a low area on the east side of a north-south lease road. Although some fluid did escape through a culvert in the lease road, sampling of snow and run-off in a nearby water run at the south boundary of the same quarter section indicates no sign of spill fluids.

It is estimated that 150 cubic metres of salt water may have been spilled. Over 3 300 cubic metres of fluid (including snow melt) have been picked up from the spill site and storage pits and disposed through other disposal wells in the Virden area.

Subsequent to the spill incident, additional pits were dug on the lease and no further off lease spills have occurred.

Over the next several days, several attempts were made to "kill" the well. During this time, the well was briefly flowed to the pits several times but for the most part remained shut in. On March 16, Chevron succeeded in setting a string of intermediate casing and shutting off the high pressure zone.

A number of different cementing operations and other evaluation methods have been performed on the well to determine its downhole condition.

Reasons for the Incident

The incident occurred because the pressures encountered were substantially higher than anticipated. Consequently, sufficient weighted mud material and surface storage capacity was not available on lease.

While reservoir pressure data available did not clearly indicate that such pressures could be expected, such a possibility should have been considered due to the proximity of injection wells.

When the well flowed and high well pressures were observed, Chevron was faced with a dilemma. It could shut in the well and eliminate a surface spill. However, in doing this, it was likely to cause downhole damage which could result in ground water contamination. On the other hand, by letting the well flow, the wellbore would remain intact but a surface spill would result.

The incident could have been prevented by the following:

1. Better design and closer scrutiny of the drilling program by Chevron.
2. Quicker action by Chevron to construct additional pits or procure tanks to provide adequate storage capacity.

Another factor in the incident was Chevron's failure to provide the Department with timely and complete reports of the incident. It should be noted, however, that timelier reporting is not likely to have had a significant effect on the outcome of the incident.

Problem Resolution

Subsequent actions by Chevron and the Department have resulted in resolution of the downhole problem and adequate clean-up of the spill area. While final completion/abandonment of the well has not been completed and while the spill site will require further rehabilitation, all possible actions have been proceeded with.

The landowner involved was informed of the incident and appears to be satisfied with the operations carried out following the incident.

Prevention

The most effective means of preventing a recurrence of this type of problem is to build-in appropriate precautions to the drilling program. The main precautions recommended by the Department and discussed and agreed to by Chevron for future wells in the project are as follows:

1. Shut in surrounding water injection wells during drilling operations.
2. Use of an intermediate string of casing to be run and cemented to surface before the high pressure zone is penetrated. This would allow higher well pressures without the risk of wellbore damage.
3. Perform a wellbore pressure test (below surface casing shoe) on next well drilled in project to better define safe pressure levels in the wellbore.
4. Provision of adequate surface storage (tanks or pits) and supply of adequate mud weighting materials on the well site.
5. Designation of a single Chevron contact person and immediate notification of Department representatives of any significant incident.
6. Equip rig with pit volume totalizers and alarms.

Spill Site Reclamation

Shortly after the incident, Chevron treated the spill site with calcium nitrate (a reclamation agent). Soil samples were taken and analysed which led to application of a large amount of gypsum (another reclamation agent) in September. The landowner sowed the site to wheat (which has low tolerance to salts) in the spring of 1987. With the exception of three small areas which remained barren, patchy germination occurred over the spill site.

Soil sampling and application of chemical amendments will continue until the site has been fully reclaimed.

Current Status

The well remains shut in and is being monitored periodically. No pressure build-up has been observed indicating the high pressure zone has been effectively isolated.

A revised drilling program has been submitted by Chevron and approved with minor modifications by the Petroleum Division. The revised program includes all the items listed under Prevention.

Chevron has undertaken a complete review and evaluation of the reduced spacing drilling program. They have indicated that the increased costs associated with drilling in such a high pressure environment may make continuation of the project uneconomical.