

DRILLING IN SHEEP COUNTRY: GAS DEVELOPMENT AT PRAIRIE BLUFF, ALBERTA

DOUGLAS A. MEAD, Shell Canada Limited, P.O. Box 100, Station M, Calgary,  
AB T2P 2H5

LUIGI E. MORGANTINI, Wildlife Resources Consulting Ltd., Box 652, Sub 11,  
Univ. of Alberta, Edmonton, AB T6G 2E0

Abstract: In 1987, Shell Canada Limited was in the process of drilling and developing 2 gas wells on a mountain ridge in southwestern Alberta. The area is a well known bighorn sheep winter range. In order to address a widespread concern about negative impacts from industrial activities on bighorn sheep, Shell adopted a series of measures designed to mitigate potential impacts. In addition, because of a limited availability of baseline data on bighorn sheep movements and distribution in the region, Shell initiated a bighorn sheep study whose objectives were to identify seasonal ranges, locate alternate winter ranges, and determine whether the industrial activity resulted in negative impacts on the sheep.

---

The Waterton Gas field in southwest Alberta was discovered by Shell Canada Ltd. in 1950's. Production from the field and processing of the gas through the Waterton Gas Plant started in the early 1960's. By the end of 1986, a total of 46 wells had been drilled.

DRILLING AT PRAIRIE BLUFF: CONCERNS AND MITIGATION

In early 1986, as part of the on-going development of the Waterton Field, Shell geologists proposed the drilling of two or three wells into the portion of the gas reservoir that was known to exist beneath Prairie Bluff. After reviewing the need to maintain proper well spacing and the geographical constraints of the area, it was determined that 2 wells were required on top of the secondary ridges connecting Prairie Bluff to Victoria Peak, a major mountain approximately 6 km southwest. This area had been long recognized as important winter-spring range for bighorn sheep. A major concern for Shell, the Alberta Government and numerous public interest groups and individuals was whether the drilling and/or the presence of gas wells would seriously impact the bighorn sheep in the area. The following issues were identified: improved access and increased legal and illegal hunting; habitat destruction; habitat loss resulting from range abandonment; and increased stress.

Several mitigative actions were proposed by Shell and approved by the Government. They were: construction/drilling would not occur between December 1 and April 30 to avoid any potential impact during a critical period; the new access road would be gated to prevent public use throughout the life of the wells; buried concrete tanks would be used for the collection of drilling wastes prior to offsite disposal; and all disturbed areas would be promptly reclaimed.

Road and wellsite construction was initiated during the month of November 1987. It will be completed in May 1988, followed by the drilling of 2 wells simultaneously.

#### THE BIGHORN SHEEP MONITORING PROGRAM

When Shell Canada first proposed to drill the gas wells at Prairie Bluff, little was known on the spatial and temporal use of the area by bighorn sheep. Furthermore, very little data existed to verify what impacts result from industrial activity in critical winter/spring range.

In October, 1986, after consulting with Alberta Fish and Wildlife staff, representatives of the Alberta Fish and Game Association, the Alberta Wilderness Association, and experienced wildlife professionals, Shell initiated a bighorn sheep monitoring study. The objectives were to: 1) determine the timing and amount of sheep use of the area; 2) identify important feeding areas, trails, etc.; 3) monitor and assess reactions to construction, drilling and production activities; and 4) record any other wildlife and recreational use of the area.

A review of the results obtained from October, 1986 to June, 1987, led to an expansion of the study with 2 more objectives: 5) obtain more information on the annual movements and distribution of the Prairie Bluff herd, by the use of radio-collars; and 6) conduct a vegetation assessment of the feeding areas on Prairie Bluff and identify other similar areas in the vicinity. The purpose was to have baseline data in the event that a habitat improvement project was required.

#### PRELIMINARY RESULTS

1. Bighorn sheep used Prairie Bluff throughout 1987, although summer and early fall use was relatively light. Some lambing occurred.
2. The Prairie Bluff herd appeared to be expanding after a major die-off in southwestern Alberta in the early 1980's. During the winter of 1986-1987, Prairie Bluff supported up to 43 animals (15 rams, 17 ewe-yearlings, 11 lambs). During the following winter (1987-88), 51 animals were counted (12 rams, 27 ewe-yearlings, 12 lambs).
3. The portion of the sheep range that will be destroyed by road and wellsite construction is a small portion of the total range available in the area.
4. Road and wellsite construction activities in November, 1987, resulted in temporary displacement of the animals (Figure 1), but they quickly re-established themselves in the area when construction ceased.
5. Helicopter activity caused much stronger reactions than blasting, use of heavy machinery, or the presence of people.

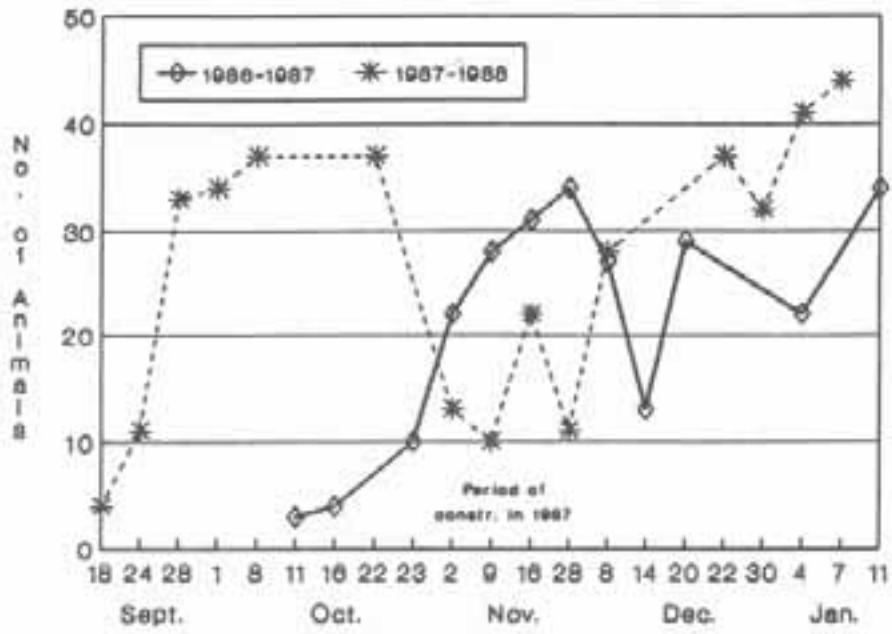


Figure 1. Number of bighorn sheep in the Prairie Bluff area of southwestern Alberta.