

Interim Directive 96-01

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Hay-Zama Lake Complex – Special Requirements

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1 Introduction

1.1 Purpose of This Directive

This interim directive sets out specific guidelines for operators proposing oil or gas developments within the Hay-Zama Lake Complex (the Complex). These guidelines recognize the unique

environmental conditions within the region and were created in partnership with the Hay-Zama Lake Complex Committee (the Committee). This joint industry/government/public committee provides ongoing advice to government and operators to ensure responsible management of the Complex.

The boundaries of the Complex, defined in figure 1, are based on biological and hydrological criteria and clearly define the wetland area and vegetation of the Complex most sensitive to impacts from oil and gas development. It also contains special provisions for seismic operations, drilling, production, and pipeline construction and operation in both Area 1 and Area 2 of the Complex; these are in addition to any requirements of the *Oil and Gas Conservation Rules* and Alberta Environment and Parks.

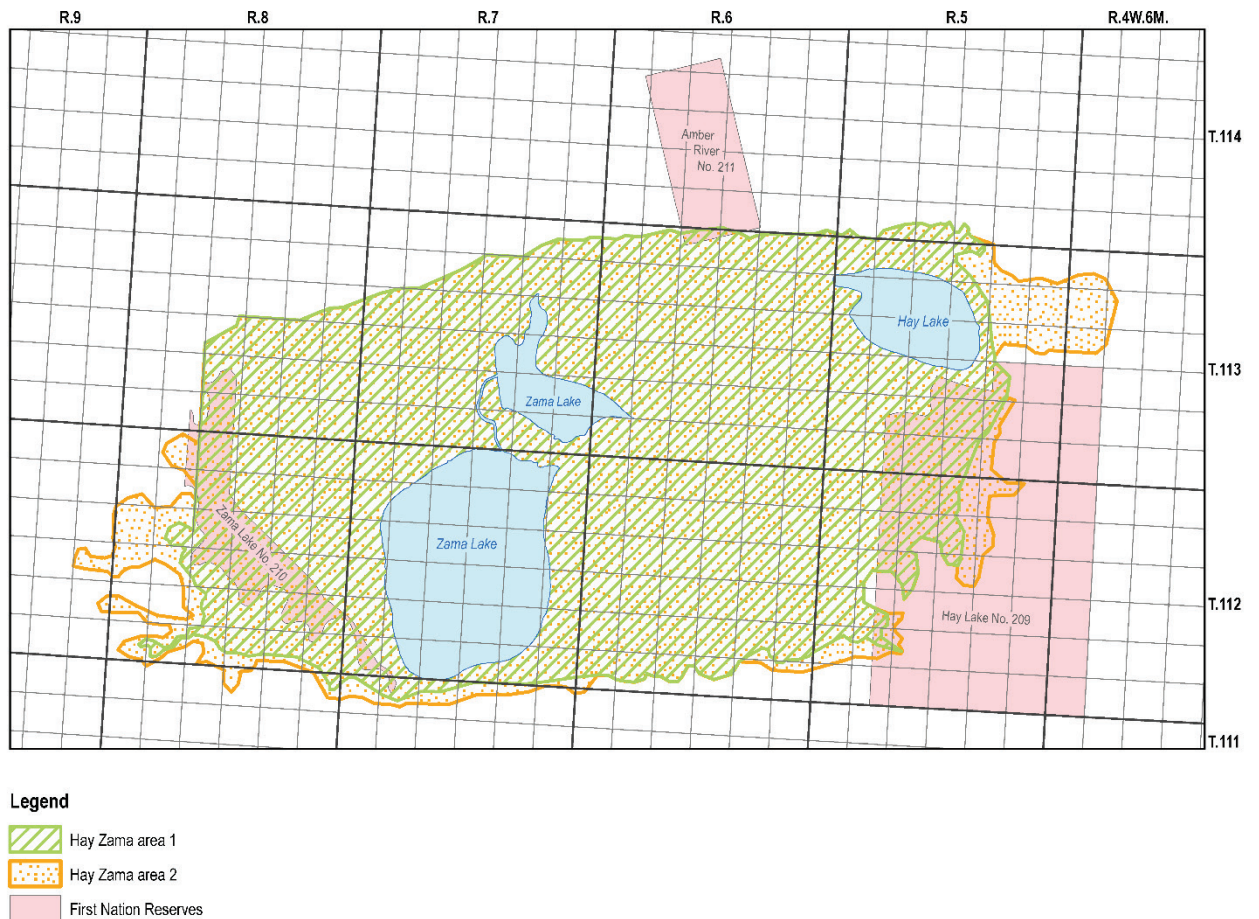


Figure 1. Hay-Zama Lake Complex

The general operating philosophy has also been changed for future developments within the Complex. The Complex is one of North America's largest and most important staging areas for migratory birds. While development within the Complex has to date been carried out without serious incident, the risk of significant environmental impact from a spill or blowout remains and may be increasing as the facilities continue to age. This is particularly true for wells located within the actual wetlands portion of the Complex. Therefore, a key objective of this interim directive is to encourage the rapid and safe depletion of any reserves being drained by wells within Area 1 and the timely abandonment of any associated well bores, while still providing companies with a reasonable opportunity to develop their mineral leases. All future mineral leases sold within Area 1 will stipulate that no surface access will be allowed. As a result, no surface development on new mineral leases within Area 1 will be permitted. For all future mineral leases sold within Area 2, a 100-metre buffer from Area 1, due to the proximity to open water, must be observed for any new surface activity, but expedited reservoir depletion will not be required.

For existing but as yet undeveloped mineral leases within the Complex, surface access for drilling, production facilities, and pipelines may be allowed. However, operators proposing any new development within Area 1 should note the following:

- 1) Mineral surface leases for new surface access may have significant timing, design, and/or location restrictions, as per the addenda to existing mineral lease agreements. A detailed review by Alberta Environmental and Parks (AEP) of any request for new surface access to Area 1 in particular should be anticipated.
- 2) Any proposed new development within the Complex, and particularly Area 1, may be subject to federal environmental review under the *Impact Assessment Act*. A detailed environmental and technical assessment by provincial authorities of any new development should also be expected. Proponents are also expected to follow normal public consultation processes including contacting and discussing proposed new developments within Area 1 with the Dene Thà First Nation, prior to submitting an application to the AER.

For existing well sites within Area 1, any activities by operators to more rapidly drain reserves (e.g., recompletions, horizontal wells) will be encouraged, provided these operations are conducted as per the operating provisions of this interim directive and in accordance with good engineering and production practices. As noted above, expedited drainage will not be required for wells within Area 2.

To further encourage the timely depletion of reserves within Area 1, as well as to provide protection for the Orphan Fund, the AER will require operators to submit, within ninety (90) days of the issuance of this interim directive, a proposed operational plan for all producing and suspended wells. This plan should provide: the operator's best estimate of reserves for each well; an estimate of the remaining life of each well and facility; plans for the development of all undrilled mineral leases; plans for recompletion or workover of any wells; plans to accelerate depletion of reserves; plans for any associated surface facilities and/or pipelines; plans for the timely abandonment and reclamation of any wells, pipelines, and facilities which have no further productive life or potential; and any operational, economic, or other barriers to expediting the rapid depletion of reserves.

Operators will be required to update the AER of any significant changes to this plan every two years. In addition, operators are expected to abandon any wells which have been suspended for more than 24 months following the issuance of this interim directive, unless an extension to the period of suspension has been obtained from the AER. Any justification for continued suspension of the wells can be included in the plan identified in the above paragraph. Companies that failed to provide the plans described above by the scheduled dates were required to abandon existing wells within Area 1.

[Original cover letter signed by the Energy and Utilities Board, Alberta Environmental Protection, and Alberta Energy.]

1.2 What's New in This Edition

This interim directive was first published in 1996. This new form is an interim attempt at making the document easier to read until a full review can be conducted. The introductory letter has been shortened, the attachments have been incorporated as proper sections and figures, and organizational information has been updated as much as possible. This means that the section numbering has changed. Also, figure 1 has been redrawn to be more legible, but it has not changed in any other way.

Finally, as part of its contributions towards the Government of Alberta's *Red Tape Reduction Act*, the AER has combined original requirements 3.5 and 3.6 into a single requirement, now numbered 4.5.

2 Seismic Operations

- 1) Approval of all seismic operations is required from AEP.
- 2) All seismic operations will be conducted with non-explosive surface sources.

3 Specific Drilling and Servicing Requirements

- 1) Before drilling into the top of the Zama Member, the operator must run intermediate casing.
- 2) The intermediate casing must be cemented full length.
- 3) The surface casing vent must remain closed except during monthly checks for pressure in the surface casing. The results must be recorded and retained on file for 2 years. These results must be submitted to the AER on request.
- 4) If a blowout occurs, the AER and AEP must be notified immediately. If it appears that oil will reach the lake water before the flow of oil can be stopped, the AER may require ignition of the oil and/or well.
- 5) All waste generated must be managed in accordance with *Directive 058: Oilfield Waste Management Requirements for the Upstream Petroleum Industry*.
- 6) All drilling fluids, shale, oil, salt water, other well effluent, and oily or chemical refuse must be contained in steel tanks and trucked to off-site disposal locations approved by AEP.
- 7) Suitable pits to contain all drilling fluids must be constructed at off-site disposal locations designated by AEP. On completion of drilling, the pits must be filled and the off-site disposal location restored to the satisfaction of AEP.
- 8) The lease must be adequately diked to prevent the accidental escape of fluids.
- 9) The AER must be notified at least 48 hours prior to any well work requiring the use of a service rig or wireline unit.
- 10) Upon completion of drilling or servicing operations, the surface on which the equipment was located must be thoroughly cleaned to ensure that no contaminants are left on the site. All scrapings must be hauled to an off-site disposal location approved by AEP.
- 11) All lease areas and off-site disposal locations must be cleaned up to the satisfaction of an officer of AEP prior to March 31 in any year, unless the deadline is extended by AEP having regard to weather conditions and terrain.

- 12) When servicing a well on ice, operators must cover the total area to be used for that operation with earth or sand to a depth of at least 10 centimetres to absorb any accidental spills during the operation. Upon application, the AER may approve an alternative method to absorb accidental spills during servicing operations. At the completion of operations, all earth, sand, or other absorbent materials must be removed from the lease and disposed of in a location approved by AEP.
- 13) Existing wells in Area 1 must be enclosed in an adequate caisson at least 331.5 metres above sea level. Wells which are not completed are to be equipped with an attached wellhead. Completed wells must be equipped with a tubing valve or plug and the wellhead left in place. Section 4 to this interim directive defines further requirements.
- 14) Existing wells in Area 1 not drilled from a pad or not enclosed in a caisson at least 331.5 metres above sea level, and not completed, must be capped at lake bottom to prevent ice damage during spring breakup. If completed, the well must be suspended using a bridge plug capped with cement set above the perforations. The wellhead must be removed and the well capped at lake bottom.

4 Specific Production Requirements

4.1 Well Sites, Batteries, Gas Plants, Compressor Stations, and Satellites

- 1) The operation of all automatic controls must be tested manually once per month and the results of the test recorded. Test results must be retained for 2 years and made available to the AER on request.
- 2) There must not be more than one battery per quadrant of the township unless otherwise approved by the AER.
- 3) The surface elevation of the pad upon which producing wells or production facilities are located must be a minimum of 331.5 metres above sea level.
- 4) The entire facility or well site, including flare pits, pipeline pumps, and truck-loading facilities, must be adequately diked and contoured to prevent the accidental escape of fluids.
- 5) Batteries, gas plants, compressor stations, satellites, and wells must be inspected by the operator daily during production periods.
- 6) Storage facilities must meet the *Directive 055: Storage Requirements for the Upstream Petroleum Industry*. Storage tanks must be equipped with an automatic high-level liquid shutoff.

- 7) All wells that are not accessible at all times (includes all wells located on the water) must have a remote shut-in system approved by the AER.
- 8) All wells must be suitably protected to prevent ice damage.
- 9) All wells with the ability to flow must be equipped with
 - a production packer set as closely above the producing formation as is practical to isolate the tubing and production casing, and
 - a valve installed in the tubing of the well, and at a minimum depth of 30 metres below the surface or such other depth as the AER may prescribe, that may be controlled from the surface and which will close automatically in the event of an uncontrolled flow of oil or gas, or a failure in the system that operates the valve.
- 10) All pumping wells must be equipped with
 - pressure shut-offs set so pumping will be stopped before there is a danger of stuffing-box failure,
 - a suitable deflection device to minimize spray in the case of a stuffing-box failure, and
 - a production blowout prevention device that will shut off any flow from the well in the event of a rod failure.

4.2 Dikes

- 11) The capacity of the dike surrounding the liquid storage tanks must exceed that of the tanks by at least 20 per cent.
- 12) The dike walls must be constructed of suitable impermeable material and compacted when built.
- 13) No drain line may penetrate the dike.
- 14) The area within the dike must be graded to one corner so that any oil spilled, or other fluids, will collect there and be readily pumped out.

4.3 Process Vessels

- 15) Process vessels must be equipped with automatic high liquid level and high pressure shut-offs and must be housed and heated.
- 16) Outlets from pressure relief devices must discharge to a tank of a capacity adequate to contain all production that may occur during the period the equipment is unattended. Upon application, the AER may approve an alternative spill control system.

4.4 Pipelines

- 17) The licensed maximum pipeline operating pressure must be such that it induces a hoop stress in the pipe not greater than 0.50 times the specified minimum yield strength of the pipe.
- 18) Prior to the start of operations, all pipelines must be field tested with water or another test medium approved by the AER to a pressure of 1.4 times the maximum operating pressure or 7000 kilopascals, whichever is greater, for a period of 24 hours.
- 19) All pipeline welds must be radiographically inspected.
- 20) Check valves must be installed in the headers at each battery.
- 21) Continuous external and internal corrosion protection for all pipelines is required. The cathodic protection systems must be checked weekly and the protection levels recorded and retained for 2 years. An annual adjustive survey is required. Results of this survey must be submitted to the AER on request.
- 22) All pipelines must be equipped with a high and low pressure shut-down system approved by the AER.
- 23) To confirm the integrity of each pipeline, an annual leak test must be conducted at the maximum operating pressure of the pipeline using the fluid being transported as the test medium. Test results must be recorded and retained on file. If pressure test charts or other records are not available to confirm that the annual tests have been conducted, the pipelines must be tested as soon as possible to 1.4 times the maximum operating pressure for 24 hours using fresh water or other AER-approved test medium.

4.5 Flare Pits and Flare Stacks

- 24) Flare pits will continue to be acceptable, provided there is virtually no probability of produced liquids entering the pit. All flare pits will be lined with a suitable impermeable liner. The use of suitable tankage (i.e., rig tanks) and/or a ground-level incineration system is recommended.

- 25) The excavation of the flare pit must be kept to a minimum in order to avoid penetrating the water table.
- 26) Any liquids released or dumped (accidental or otherwise) in the flare pit must be disposed of outside the Complex immediately.
- 27) All stock tank vapours must be conserved or burned in accordance with requirements outlined.
- 28) The flare system must be equipped with a suitably sized liquid knockout and high liquid control system.
- 29) Gas lines to the flare system must be equipped with a flame arrestor.
- 30) The flare system must be equipped with a continuous ignition device.

5 General Drilling and Production Requirements

- 1) An oil spill contingency plan must be updated annually and approved by the AER. Operators must be prepared to take immediate corrective measures in the event of a spill.
- 2) Any accident resulting in the escape of oil, well servicing fluids, or produced water must be immediately reported to the Energy and Environmental Emergency 24-Hour Response Line (1-800-222-6514).
- 3) During a 5-week spring period (commencing mid-April) and an 8-week fall period (commencing mid-August) each year, the company must
 - suspend well production and helicopter operations, or
 - AEP and operators within the Complex will monitor fish and wildlife activity in the Complex and, in consultation with AEP, determine for which wells, if any, suspension of production and helicopter operations is required and for what period of time.
 - Suspension of operation must include
 - consultation with the AER to establish appropriate shutdown procedures and sequences,
 - shutting in the wells, and
 - depressurizing all pipelines and vessels.
- 4) All wells, batteries, compressor stations, satellites, and pipeline routes must be patrolled within 24 hours of production being suspended.

- 5) For the period between mid-April to approximately mid-July each year, construction of roads, pipelines, etc. with respect to stream and river crossings will be suspended to accommodate fish spawning and migration. The exact dates will be set by AEP.
- 6) Trucking of oil, produced water, or well servicing fluids must be kept to an absolute minimum. Oil must not be trucked from outside the area to a shipping point inside the area. If oil must be used for well servicing, prior approval must be obtained from the AER.