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## **Case Study of Moyno Tri-Phase® System Pembina Belly River B East Unit, Warburg, Alberta, Canada**

In 1994, Talisman Energy, Inc. acquired the majority working interest in the Pembina Belly River B East Unit in Warburg, Alberta, Canada. It was considered attractive due to its potential to increase oil production through workovers and infill drilling.

The old battery, constructed in the 1960's, consisted of a production header building, a water injection building, four production tanks, two water tanks, a flare pit, clean oil shipping pump and an LACT unit. The production header building housed a group separator, two test separators, production header and a vertical treater. The water injection building housed a water injection header, water injection pump, filter unit and office. Normal operating pressure of the group separator was 53 PSI.



The original site was in need of an update and immediate clean-up. There were signs of both salt water and oil contamination at various locations around the battery.



<b>Location</b>	Warburg, Alberta, Canada
<b>Field</b>	Pembina
<b>Pool</b>	Belly River C & O
<b>Oil Gravity</b>	0.75 API
<b>Gas Gravity</b>	0.75
<b>Water S.G.</b>	1.03
<b>Secondary Recovery</b>	Waterflood

Talisman made the decision to convert the battery to a satellite with an appropriately sized Moyno Tri-Phase System.

**Its decision was based on the following criteria:**

- Battery required upgrade to handle planned fluid volume increase
- The conservation of the produced solution gas which had previously been flared
- Site remediation was necessary to prevent further contamination
- Existing wellhead pressure must be maintained at or below previous levels
- Cost of multiphase pump system must be more economical than installation of large diameter flowline
- The elimination of the neglected produced water disposal system
- The new satellite building includes the test separator, the Moyno Tri-Phase System, production header and water injection header.

**The conversion of the old battery to a satellite resulted in numerous benefits for Talisman:**

- The satellite installation costs were lower than the costs to update the battery
- Operating and maintenance costs for the satellite are less than the original battery
- Site remediation was completed in a relatively short period of time
- The simplicity of the satellite equipment minimizes the possibility for future site contamination
- The Moyno Tri-Phase System was designed to handle existing and potential future volumes that might be tied into the satellite
- The satellite inlet pressure is 35 psi and the discharge pressure is 195 psi at existing flow rates
- The Moyno Tri-Phase System reduced wellhead pressure by 18 psi, thus enhancing production

