



Terra Slicing Technology

# FALCONRIDGE OIL LTD.

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FalconRidge is a North American based company with its headquarters located in Toronto, Canada. FalconRidge also has offices in California and Denver USA.

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## What we do for you

FalconRidge employs an advanced proprietary excavation and hydro cutting technology known as TerraSlicing. The Terra Slicing Technology (referred to as TST) is used to enhance “dead” or non-performing well assets, essentially revitalizing the pre-existing well and establishing a flow rate with a significant percentage of its initial production. By applying TST, an operator will retrieve a significant portion of the well reserves still locked in the ground. TST is applied to the following environments:

- Producing Well Assets
- Dead wells
- Non-performing well assets
- Low yield assets

TerraSlicing may be used in virtually all environments and applications in the oil and gas industry. TST is applicable on land, or marine environments, and may be used for both Oil and Gas well applications, in vertical or horizontal formats.

## FalconRidge Oil Ltd.

FalconRidge Oil is a oil and gas technology company that specializes in identifying and accessing additional petroleum reserves that are usually left in the ground. Our value proposition is extracting new resources from wells that have been assessed as uneconomic. Using TST, FalconRidge offers operators a lower-cost alternative to drilling a new well, with practically equal performance results. FalconRidge’s goal is to shift the industry and social paradigm away from new drilling and towards increasing efficiency of current extraction in existing wellbores to increase recovery of oil and gas. Thus, when widely applied, TST can add significant reserves to the energy resources of the world.

No other  
technology  
like it



***Recover More Oil and Gas  
Faster and Safer!***



## TERRA SLICING TECHNOLOGY

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### What is TST?

Terra Slicing Technology (TST) is a patented oil and gas completion technology that increases production of under-performing oil and gas assets by excavation, cutting through damaged zones, increasing permeability, creating non-existent vertical permeability, avoiding damage caused by perforation, increases the drainage area, and is safer than a frac. TST can be used in almost any situation with high risk wells and is the only tool that can work in less than 5% porosity/permeability.

- Patented, advanced excavation technology
- Terra Slicing cuts two perpendicular slices, through casing and cement, 3-10 ft. deep into formation, using high-pressure abrasive slurry (5000 psi)
- Optionally, Terra Slicing can orient the down hole machine, inject chemical reagents, and create fractures
- Terra Slicing eliminates near-well bore compaction, cleans formation and increases permeability
- Creates pressure drop in near-well bore zone
- Creates vertical permeability that does not exist naturally

Ecologically safe  
environmentally  
friendly





# Why Consider Terra Slicing?

## Poor Pressure Regime Around the Well bore

Conventional drilling & completion technologies cause high pressure, low permeable area to form around the well bore. Often conventional drilling & completion technologies also damage the near-well bore zone.

## Terra Slicing Re-Distributes Stress

A vertical “door-frame” sliced design redistributes mechanical stress to the outside tips of the slices. This removes near-well bore stress and creates a pressure drop that increases permeability. Excavation expands the drainage surface area.



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## Financial Benefits

- Predictable results prior to any major expenditures
- Significant increase in productivity
- Shorten return on investment
- Increase cash flow, enhancement of current yield
- Extend life of current low or non-producing assets
- Recovery of assets previously unattainable
- Significant improvement of newly drilled assets

## Benefits of Terra Slicing

- Re-distributes stresses away from near-well bore zone
- Porosity increases >> 4-5x; Permeability >> 15x
- Drainage volume increases to 6.2x greater than borehole
- Very deep penetration (compared to perforation)
- Eliminates screen outs, lamination, skin effects (all barriers)
- Creates vertical permeability that does not normally exist in nature (reaches full thickness through inter bedding / layers)
- Has a longer lasting effect than any other technology
- “Managed balanced” drilling – not overbalanced
- So powerful it can cut multiple casings & deep rock
- Does not crack casing cement / keeps hydraulic integrity
- The only technology that actually excavates rock
- Accurate & controllable connection / communication
- Helps direct a hydraulic fracture (even near water)
- Follow-up intensification methods also shows increased results due to huge drainage surface

# Proven Results

## Data Analysis

Data analysis is the first stage in applying the TST process. By examining the well data and historical performance, FalconRidge engineers are able to accurately predict the yield and net result of the technology application, often to within 10% of final yield.

The precision in the analysis phase of the project quickly allows FalconRidge staff to determine the financial feasibility of the project.



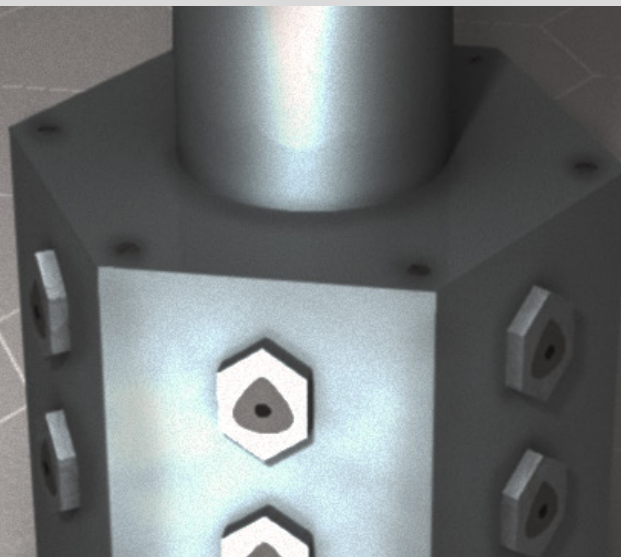
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## Safe and Proven Technology

The GEN-1 TerraSlicing technology has been applied historically since the early 70's with thousands of successful implementations. TST is now in its GEN-3 phase utilizing advancements in metallurgy and engineering technologies to make the application that much more efficient. The technology is completely safe with predictable and measurable results. With thousands of field applications, TST may be used predictably and safely in virtually any oil or gas well.

The only  
vertical cutting  
tool of it's kind





# Well Information Requirements

One of the key benefits to deployment of TerraSlicing is the predictability of TST application to the asset. MOST IMPORTANTLY, are the well logs, any data files, and production history, formation, reserve, and reservoir details. As with any project, the more knowledge the TST engineers can study, the more accurate the results. Virtually any well can be enhanced, and we TST engineers can determine if a project is viable by examining the well data and past production. The following is a list comprehensive “wish list” of useful data which can be provided to enhance application of TST to a given Asset. We recognize that often much of the data is unavailable, however what can be provided will assist the engineers in evaluating a target property.



## A. Geological / Geophysical

1. Rock type, rock analysis, sample of rock for destructive testing is desirable.
2. Hydrocarbon analysis, including viscosity, sour chemicals, scale, asphaltenes, paraffins.
3. Water analysis, including specific conductivity and mineral, salt and trace metals content.
4. Every and all logs run on well, at any point in time in history of well, including electric / resistivity (DIL), neutron porosity / density (CDNL), mud, oxygen, sonic, computer log, etc.
5. Temperature of target interval(s), but a temperature log is helpful.
6. Isopach map or other contour map or other seismic data interpretation (top and bottom).
7. Porosity stress matrix or tectonic stress data.
8. Initial and current reservoir pressure.

## B. Engineering

### Drilling

1. Drilling / daily reports or drilling summary.
2. Bit type(s), size, speed, bore hole characteristics.
3. Composition, pressure balance, pH, weight, working muds / fluids / chemicals used, etc.
4. MWD data if available.
5. LWD data if available.
6. Deviation – slope and orientation of target interval.

### Cased hole

1. Casing type, size, grade, centralizers, etc.
2. CCL (we do not like to slot through joints and this will tell us where they are).
3. Cement type, amount, mix, cement bond log if available.



## B. Engineering (cont'd.)

### Open hole

1. Rock stability analysis if any.
2. Casing liner, gravel pack type, size, grade, centralizers, if any.



### Completion

1. Treatment reports – type of treatment – perforation, stimulation details – shot, acid, frac etc.
2. Frac report details – quantities & compositions of materials, rates, pressures, times, etc.
3. Flow testing or other testing – all results, methods of testing, esp. testing by stages, if any.
4. Reports for 1 – 3 (Completion) for all subsequent re-works or re-stimulation efforts.
5. Downhole Logistics
6. Downhole production equipment & surface production equipment.
7. Wellbore diagram.

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## C. Production

1. All records for rates, pressures – all fluids (inc. gases), on daily or weekly basis, if possible.
2. Balancing and/or overproduction status that occurred at any time.

## D. Independent Analysis

1. Any independent calculations – drainage radius, gross/net pay thickness, pay/acre.
2. Independent reservoir analysis or model if available, including initial reservoir pressure, skin factor, permeability, in-place hydrocarbons, drainage area, etc.
3. Any other notable geological / geophysical, engineering, or operational details.
4. Any decline rate analysis, by stage if possible, and not by commingled production.
5. Any previous life projections or analysis, by material balance or decline curve.
6. Reserve to production ratio or analysis.
7. All analysis to include calculations, please.

# Summary and Review

## Terra Slicing

TST is the most advanced water jetting technology today. TST uses high pressure abrasive slurry to cut the casing, the cement, and deep into the formation. Two vertical windows, each going out 6 to 15 feet, about 1 to 3 inches wide, and as vertically tall as necessary. TST is very different from shaped charge perforation because it is a cutting procedure. No explosion, or burning, or scarring, or lamination.

Access reserves far beyond what was previously accessible

## Centrator

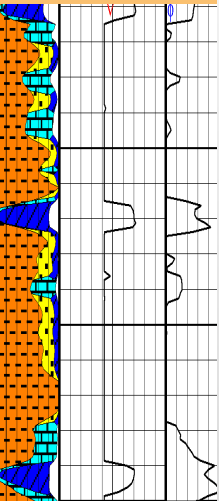
We use a device called a centrator to orient the tool according to any depth, vector, or angle. TST is very accurate and reliable. The centrator ensures the cut is perpendicular to the maximum stresses of the porosity matrix.

## Chemical Slot Expansion

At this point in the procedure, permeability is already 15 to 20 times higher than before. Now, we can insert chemistry directly into the window cavities if necessary, to further increase permeability. Note – we only use slurry and chemicals that are absolutely safe for the well's geology.

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Up to 30-50%  
**Faster Oil Recovery**

Up to 80-160%  
**Faster Gas Recovery**

# Conclusion



## Risks and Costs

Risks of failing to cut are minimal, even for multiple casings and cement. Equipment is designed for deep cuts. Cutting and orientation ability can be demonstrated on surface prior to job. Depending on size, depth, number of terra-slices, and complexity of the job, costs are variable. However we provide an economic model outlining the cost benefits analysis. Risk and cost can be reduced further by consulting with experienced engineering and geological team of FalconRidge Oil.

## Final Wrap Up

### So technically what do we do?

1. We start with an existing oil and gas asset.
2. TST cuts away several tons of rock in two directions in the wells performance or “pay” zone(s). When we do this, we remove the compression around the wellbore, and move it to the tips of the slots.
3. We can then insert chemistry to clean the near-wellbore zone to ensure maximum productivity (optional).
4. Permeability at the lateral sides of these windows increases to 15 times what exists in nature. Permeability at the tips goes to zero.
5. What the well becomes is a new structure that you have to imagine is not a 5½ inch radius any more, but a radius between 10 and 20 feet wide in the target interval.

This allows the well to access reserves far beyond what was previously accessible. Your low production goes way up. Your dead well becomes revived. By working with FalconRidge, we will enhance productivity, increase revenue, and extend the life of current oil and gas assets.







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