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Welcome to the SPE Thermal Well Integrity and Design Symposium

Effective thermal well design and integrity management is critical in the current and future business environment because it allows industry to extend the life of a well and maximize recovery, reduce operating costs, and prevent or mitigate harmful environmental impacts. It involves the appropriate application of technical, operational and organizational solutions to reduce the risk of a wellbore failure.

Thank you for joining your fellow SPE members and experts in the thermal in-situ community to share the latest in well design practices and well integrity solutions. As heavy oil and bitumen projects require significant capital investment over long time frames, the consistent application of sound engineering principles must continue even during commodity price cycles. Through progression of new technology and practical sharing of ideas amongst participants, industry will improve the collective efficiency, reliability and longevity of existing and planned thermal wells.

This informative, interactive event has become one of SPE Canada’s most popular, growing from a small 2-day workshop to a 3-day symposium that includes technical papers, invited presenters, a panel and breakout sessions. Bringing together a local and international audience made up of SPE members and experts in the thermal in-situ community, the goal of this symposium is for attendees to share, discuss and learn from each other.

GENERAL INFORMATION

Accessibility
Our events and functions are accessible to all attendees with wheelchairs. If you require special arrangements, please contact our staff at the registration desk.

Commercialism
In remaining consistent with symposium objectives and SPE guidelines, commercialism in presentations will not be permitted. Company logos should be used only to indicate the affiliation of the presenter(s).

Continuing Education Units
Attendees will receive 2.45 CEU’s. One CEU equals 8 contact hours of participation. CEUs will be awarded through SPE Professional Development for participation and completion of SPE symposium. A permanent record of a participant’s involvement and awarding of CEUs will be maintained by SPE.

Proceedings
Technical papers will be published. A digital Proceedings card giving online access to papers is included in registration prices. Non-papered presentations, approved for release, will be shared after the Symposium.

Electronic Devices
As a courtesy to the speakers and your fellow registrants, please turn off all electronic devices during presentations.

Photography and Recording Policy
Unauthorized video/audio recording is expressly prohibited in the session room(s) or poster area, whether by video, still or digital camera, mobile phone, or any other means or form of reproduction.

Any person attending may be photographed or videotaped, and by your attendance, you give permission to use your image in possible future marketing publications including print, online, and video.

Symposium Format
Symposiums maximize the exchange of ideas among attendees and presenters through technical presentations followed by extended Q&A. Focused topics attract an informed audience eager to discuss issues critical to advancing both technology and best practices. There is a combination of papers and invited presentations which can take the form of case studies, best practices and technology reviews highlighting engineering achievements and lessons learned. In order to stimulate frank discussion members of the press are not invited to attend.
THANK YOU TO OUR SPONSORS

Corporate:

Variperm Canada Limited

Welcome Reception:

Symposium Totes:

Audio/Visual:

Thursday Coffee:

Tuesday Lunch:

Candy Station:

Notepads & Pens:

Symposium Chairperson
Uliana Romanova
Delta Screens

Barkim Demirdal
Devon Energy

Carl Dyck
Imperial Oil

Lars Hinrichs
Innovation in Motion

Doug Hollies
Codeco Oilsands Engineering

Isaac Khallad
ConocoPhillips Canada

Marty Lastiwka
Suncor Energy

Blair Mackie
Summit Tubulars

Zim Okafor
Nexen Energy

Dejan Ristic
Canadian Natural Resources Limited

Erwin Virtusio
Schlumberger

John Van Vliet
Noetic Engineering

Kristoffer Watson
Precise Downhole Services

Todd Zahacy
C-FER Technologies

Symposium Vice Chairperson
Christian Hamuli

Mark Anderson
Devon Energy

Linda Blair
EVRAZ

Jeanna Brown
Shell Canada

Scot Buell
Chevron
**SCHEDULE OVERVIEW**

Subject to change.

**MONDAY, 28 NOVEMBER**
1800–1930 | Welcome Reception
*Sponsored by* DELTA SCREENS

**TUESDAY, 29 NOVEMBER**
0700–0750 | Registration and Breakfast
0750–0800 | Opening Remarks
0800–0930 | Session 1: Keynote Presentations
0930–1000 | Coffee Break and Exhibits
1000–1130 | Session 2: Casing and Connection Design
1130–1300 | Lunch & Exhibition
*Sponsored by* Schlumberger
1300–1430 | Session 3: Casing Integrity and Monitoring
1430–1500 | Coffee Break, ePoster and Exhibits
*Sponsored by* EVRAZ
1500–1630 | Session 4: Cement Integrity
1630–1800 | Networking Reception

**WEDNESDAY, 30 NOVEMBER**
0700–0800 | Registration and Breakfast
0800–0930 | Session 5: Liner Installation and Production Conformance
0930–1000 | Coffee Break, ePoster and Exhibits
1000–1130 | Session 6: Risk Assessment
1130–1300 | SPE Canadian Regional Award Luncheon
1300–1430 | Session 7: Breakout Session Part 1
1430–1500 | Coffee Break, ePoster and Exhibits
1500–1630 | Session 8: Breakout Session Part 2

**THURSDAY, 1 DECEMBER**
0700–0800 | Registration and Breakfast
0750–0930 | Session 9: Surface Casing Vent Flow and Gas Migration
0930–1000 | Coffee Break and Exhibits
*Sponsored by* Doulé, Ventimeter
1000–1130 | Session 10: Panel Discussion
1130–1300 | Keynote Lunch
1300–1430 | Session 11: Sand Control and Performance Optimization
1430–1500 | Coffee Break, ePosters and Exhibits
*Sponsored by* Doulé, Ventimeter
1500–1600 | Session 12: New Technology

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**Did You Know....**

Earlier this year, the SPE Canadian Educational Trust was converted into a new entity, the SPE Canadian Educational Foundation (SPECEF). With the new governance structure, SPECEF has the flexibility to create new programs, scholarships and energy educational initiatives that will benefit SPE Canada members.

For more information about SPECEF or to make a charitable donation please visit: www.spe.org/canada

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**In Lieu of Speaker and Committee Gifts**

On behalf of the Program Committee and Symposium speakers, SPE Canada is pleased to make a donation of $750 to the Calgary Food Bank, a registered Canadian charity dedicated to gathering and distributing quality emergency food to those in need. This donation has been made at the request of the committee, in lieu of speaker and committee gifts.
TECHNICAL AGENDA

MONDAY, 28 NOVEMBER

1800–1930 | Welcome Reception  
Sponsored by Mt. Stephen Room

TUESDAY, 29 NOVEMBER

All technical sessions are located in Van Horne A.

0700–0750 | Registration and Breakfast  
Van Horne C

0750–0800 | Welcome and Opening Remarks  
Uliana Romanova, Delta Screens  
Christian Hamuli

0800–0930 | Session 1: Keynote Presentations
Session Chairpersons: Linda Blair, EVRAZ  
Blair Mackie, Summit Tubulars

What the Future Holds for Our Oil Sands Community

Presentations from journalistic, financial and operator standpoints will provide global insights to the future of thermal development. A Panel Discussion with these recognizable speakers will provide further perspective on how the current in-situ thermal environment is responding to the ongoing challenges of this sector of the industry.

0800–0830 | Keynote Presentation 1: Heavy Oil in Western Canada – How We Got Here and What in the World Do We Do Next!  
Keynote Speaker: Darcy Spady, 2018 SPE President, Broadview Energy

0830–0900 | Keynote Presentation 2: Canada’s Energy Reckoning - the Nexus of Innovation, Carbon Pricing and Trump  
Keynote Speaker: Deborah Yedlin, Calgary Herald

Keynote Speaker: Roger Serin, TD Securities

1000–1030 | Coffee Break and Exhibits  
Sponsored by Van Horne B

1000–1130 | Session 2: Casing and Connection Design
Session Chair: Dejan Ristic, CNRL  
Zim Okafor, Nexen Energy

The focus of the session is sharing advances in thermal casing and liner design. The presentations will cover a cost-time saving approach for qualifying connection product lines with multiple size/weight/material combinations based on a prior evaluation or successful field use; a new numerical model to estimate the structural resistance of slotted and drilled liners as well as optimize slots/holes pattern design from the mechanical integrity point of view; and three thermal well case studies involving the application of a post-yield design method showing the progression from working-stress design approach, to a modified Holliday approach, and finally to a low-cycle fatigue approach.

1100–1130 | Lunch and Exhibits  
Sponsored by Van Horne C

1300–1430 | Session 3: Casing Integrity and Monitoring
Session Chairs: Scot Buell, Chevron  
John Van Vliet, Noetic Engineering

Electro-magnetic methods for evaluating casing integrity are presented in this session. A status report on well integrity design standards development will also be provided by CSA with a focus on thermal operations.

1300–1330 | Invited Presenter

1330–1400 | Presentation 2: Safe And Dependable Abandonment Of Assets In A Thermal Recovery Field  
Presenting Author: Afshin Ahmady, Haliburton

1400–1430 | Invited Presenter

1400–1430 | Presentation 3: Z625 Well Design Standard and Beyond  
Presenting Author: Matt Rahimi, CSA Group
1430-1500 | Coffee Break, ePoster and Exhibits
Sponsored by EVRAZ Van Horne B & Van Horne Foyer

1430-1445 #182514
- Eposter: The Research And Application About Aluminate Cement Slurry In Heavy Oil Thermal Well
  Presenting Author: Zaoyuan Li, Southwest Petroleum University

1500-1630 | Session 4: Cement Integrity
Session Chairs: Erwin Virtusio, Schlumberger
Juan Pablo Martin, Tenaris
This session is focused on providing alternative outlook on cementing thermal wells from material selection to analysis.

1500-1530 #182525
- Presentation 1: Revisiting Thermal Well Integrity Through a Closer Look at Casing-Cement-Formation Interaction
  Presenting Author: Adonis Ichim, University of Oklahoma

1530-1600 #182524
- Presentation 2: Lightweight Cement Systems Help Prevent Permafrost Melt
  Presenting Author: Glen Fyten, Halliburton

1600-1630 Invited Presenter
- Presentation 3: Evaluation of Alternative Materials for Thermal Well Cement Remediation
  Presenter: Jonathan Heseltine, C-FER Technologies

1630-1800 | Networking Reception Van Horne C

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WEDNESDAY, 30 NOVEMBER

0700-0800 | Registration and Breakfast
Van Horne C

0800-0930 | Session 5: Liner Installation and Production Conformance

Session Chairs: Doug Hollies, Codeco
Marty Lastiwka, Suncor Energy

Two key aspects of maintaining consistent and uninterrupted SAGD production and injection are reviewed in the papers, presentation and e-poster in this session. In two of these discussions, the quantification of running loads during installation and design of liner equipment are presented – this is critical for maintaining sand exclusion. The balance of the discussions provide a focus on injection and production control along the horizontals, which are key to improving SAGD efficiency and also contribute to the reliability of sand control systems. With the implementation of both injection and production control systems, steam injection in the upper SAGD well should be evenly distributed and never directed to the SAGD producer well below it. Attend this session and learn about how to accomplish these production-critical tasks.

0800-0830  #182522
Presentation 1: Injector Design Optimisation for SAGD Conformance and Cost
Presenting Author: Trent Kaiser, Noetic Engineering

0830-0900  #182508
Presentation 2: Design Process of Inflow Control Technologies - From Inception to Application
Presenting Author: Tarik Abdelfattah, Baker Hughes

0900-0930 Invited Presenter

Presentation 3: Experimental Validation of Installation Limits for Slotted Liners
Presenter: Spencer Taubner, Noetic Engineering

0930-1000 | Coffee Break, ePoster and Exhibits
Van Horne B & Van Horne Foyer

0930-0945 Invited Presenter

Eposter: Practical Considerations for Estimating Downhole Load Conditions in Real-Time
Presenter: John Van Vliet, Noetic Engineering

Sanjel Energy Services is a new, distinct company committed to providing industry-leading services to Canadian oil and gas producers.

Sanjel Energy Services is at the forefront of cement-integrity technology as we actively collaborate with prominent academics to reduce the risk of cement failures.

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Thermal EOR involves several risks that operators must find a way to identify and mitigate in some way. This session will explore various risks and associated mitigations related to liner design and cement sheath integrity. We will also consider a framework to capture the integrity of the entire system, that will highlight the potential hazards and the mitigations to prevent a loss of containment.

**1000-1030**  
**Presentation 1:** A Novel Failure Management Framework for SAGD Well Integrity  
*Presenting Author: Christian Hamuli, Consultant*  

**1030-1100**  
**Presentation 2:** Risk-based Analysis of Thermal Well Integrity Through Integration of Caprock Geomechanics and Cement Sheath Design  
*Presenting Author: Ken Glover, Trican Well Service Ltd.*

**1100-1130**  
**Presentation 3:** Effect of Near Wellbore Effective Stress on the Performance of Slotted Liner Completions in SAGD Operations  
*Presenting Author: Saman Azadbakht, University of Alberta*

**1130-1300**  
2016 SPE Canadian Regional Award Luncheon  
*Van Horne C*

SPE gives numerous honours and awards that recognize the contributions made by members to the Society, the engineering profession, and their communities. The SPE regional awards honour a larger group of individuals whose contributions and technical expertise make them stand out among their peers. During lunch we will celebrate these members.

---

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1300-1330 (Van Horne A)  
**Breakout Kick-Off: A Thermal Teen Crisis... the Early Learnings**  
**Presenter:** Kris Watson, Precise Downhole Services  
**Breakout 1:** Exploring the Challenges (Human/Corporate/Technical) of Shutting Down and Restoring Operations During a Natural Disaster  
**Facilitators:** Wendy Akins, Nexen  
**Kris Watson, Precise Downhole Services**  
**Breakout 2:** Sand Control for Thermal Production Operations: What, Where and Why?  
**Facilitators:** Uliana Romanova, Delta Screens  
**Doug Hollies, Codeco Oilsands Engineering**  
**Breakout 3:** Surface Casing Vent Flow (SCVF) and Gas Migration (GM)  
**Facilitators:** Carl Dyck, Imperial Oil  
**Todd Zahacy, C-FER Technologies**  

1430-1445  
- **Eposter:** Reflections on Overall Heat Transfer Coefficient with Application to Thermal Well Design  
  **Presenting Author:** Adonis Ichim, University of Oklahoma  

1500-1630 (Van Horne A)  
**Breakout 1:** Continuation of Breakout Group 1 - Exploring the Challenges (Human/Corporate/Technical) of Shutting Down and Restoring Operations During a Natural Disaster  
**Facilitators:** Kris Watson, Precise Downhole Services  
**Wendy Akins, Nexen**  
**Breakout 2:** Continuation of Breakout Group 2 - Sand Control Liners – Well Integrity Issue or Not?  
**Facilitators:** Doug Hollies, Codeco Oilsands Engineering  
**Uliana Romanova, Delta Screens**  
**Breakout 3:** Continuation of Breakout Group 3 - Surface Casing Vent Flow (SCVF) and Gas Migration (GM)  
**(Baron Shaughnessy)**  
**Facilitators:** Carl Dyck, Imperial Oil  
**Todd Zahacy, C-FER Technologies**  

1430-1500  
- Coffee Break, ePoster and Exhibits  
  **Van Horne B & Van Horne Foyer**
### THURSDAY, 1 DECEMBER

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>0700-0750</td>
<td>Registration and Breakfast</td>
<td>Van Horne C</td>
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<tr>
<td>0750-0800</td>
<td>Break-Out Group Report on Outcomes</td>
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<tr>
<td>0800-0930</td>
<td><strong>Session 9: Surface Casing Vent Flow and Gas Migration</strong></td>
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<td>Session Chairs: Jeanna Brown, Shell Canada Christian Hamuli</td>
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<td></td>
<td>This session is focused on surface casing vent flow and gas migration source identification and remediation techniques in relation to thermal wells.</td>
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<tr>
<td>0800-0830</td>
<td><strong>Presentation 1: Remediation of Surface Casing Vent Flows from Thermal Wellbores</strong></td>
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<td>Presenter: Grant Duncan and Scott Young, Suncor Energy</td>
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<td>0830-0900</td>
<td><strong>Presentation 2: Identifying a Source of Gas Migration: How Gas Composition and Stable Carbon Isotope Composition of Light Hydrocarbons Can Help to Solve the Problem</strong></td>
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<td>Presenter: Andrey Tsyganok, Maxxam Analytics</td>
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<td>0900-0930</td>
<td><strong>Presentation 3: Characterizing Source Zones for Stray Gases in Soils and Surface Casing Vents From Thermal Production Operations</strong></td>
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<td>Presenter: Scott Mundle, University of Windsor</td>
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<td>0930-1000</td>
<td><strong>Coffee Break and Exhibits</strong> <em>Sponsored by: <a href="#">Van Horne B</a> &amp; <a href="#">Van Horne Foyer</a></em></td>
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<td>1000-1130</td>
<td><strong>Session 10: Panel Discussion</strong></td>
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<td>Session Chairs: Barkim Demirdal, Devon Isaac Khallad, ConocoPhillips</td>
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<td>SCVF/GM remains a challenge for thermal wells particularly its measurement, regulatory classification, risk assessment, source identification and mitigation. These various challenges and corresponding actions will be discussed by a panel of industry and regulatory experts.</td>
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<td>Moderator: Christian Hamuli</td>
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<td>Panelists: Ian Peleshok, Alberta Energy Regulator</td>
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<td>Meg Barker, Devon</td>
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<td>Scott Mundle, University of Windsor</td>
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<td>Blair Temple, Imperial Oil</td>
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<td>1130-1300</td>
<td><strong>Keynote Lunch and Exhibits</strong> <em>Sponsored by: <a href="#">Van Horne C</a></em></td>
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<td>1300-1340</td>
<td><strong>Session 11: Sand Control &amp; Performance Optimization</strong></td>
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<td>Session Chairs: Uliana Romanova, Delta Screens Todd Zahacy, C-FER Technologies</td>
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<td>The focus of this session is sand control in thermal production operations. Criteria for slotted liner design and the impact of the installation loads on slotted liner performance together with advancements in new technology will be discussed.</td>
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<td>1300-1330</td>
<td><strong>Presentation 1: New Criteria for Slotted Liner Design for Heavy Oil Thermal Production</strong></td>
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<td></td>
<td>Presenting Author: Mahdi Mahmoudi, University of Alberta</td>
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<td>1330-1400</td>
<td><strong>Presentation 2: Wells From Heaven, Wells From Hell</strong></td>
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<td>Presenting Author: Karl Miller, Avalon Oil and Gas</td>
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<td>1400-1430</td>
<td><strong>Presentation 3: Impact of Installation Loads on Thermal Service Performance of Slotted Liners</strong></td>
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<td>Presenting Author: Mark Chartier, Noetic Engineering</td>
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<td>1430-1445</td>
<td><strong>Coffee Break, ePosters and Exhibits</strong> <em>Sponsored by: <a href="#">Van Horne B</a> &amp; <a href="#">Van Horne Foyer</a></em></td>
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<td><strong>Eposter: Investigation into the Use of Commercial Sands and Fines to Replicate Oil Sands for Large-Scale Sand Control Testing</strong></td>
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<td>Presenting Author: Mahdi Mahmoudi, University of Alberta</td>
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<td>1445-1500</td>
<td><strong>Eposter: What Vacuum Insulated Tubings (Or Vacuum Insulated Casings) Bring To Thermal Wells</strong></td>
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<td>Presenting Author: Jean Damour, MAJUS</td>
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<td>1500-1600</td>
<td><strong>Session 12: New Technology</strong></td>
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<td>Session Chairs: Carl Dyck, Imperial Oil Kris Watson, Precise Downhole Services</td>
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<td>This session focuses on the introduction of some New technologies/Innovation into existing thermal projects. The presenters will summarize findings from recent studies applied towards the completion strategy, will describe the New Technology and/or Innovation, and speak to the economic viability in today’s Oil Market.</td>
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<td>1500-1530</td>
<td><strong>Presentation 1: Thermal Expansion Casing Collars Installed to Mitigate Thermal Strain and Reservoir Compaction</strong></td>
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<td>Presenting Author: Mike Geneau, Thermal Oiltools Canada</td>
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<td>1530-1600</td>
<td><strong>Presentation 2: In Well Monitoring of Ultra High Temperature Wells, An Alternative to Fiber Optics</strong></td>
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<td>Presenting Author: Janelle Watson, Shell Canada Ltd.</td>
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