

# AMENDMENT OF NEB JUNE 18 2015 ORDER TO REDUCE HYDROSTATIC TEST PRESSURE : CONSEQUENCE

EXPLANATIONS BASED ON REGULATORY  
DOCUMENTATION FILED BY ENBRIDGE AND THE  
NATIONAL ENERGY BOARD (NEB) ON NEB  
WEBSITE

Lorraine Caron, PhD [caronlor@yahoo.com](mailto:caronlor@yahoo.com)  
Les Citoyens au Courant

August 27, 2015

# TIMELINE

- **June 18 2015** : NEB orders hydrostatic testing on 3 selected segments, 2 in Ontario and 1 in Quebec. The hydrotest comprises a strength test and a leak test. The ordered strength test is a Spike test at 100% SMYS for 1 hour to be applied at the high point of the segment. Press release by NEB for Order MO-045-2015.
- **July 22 2015** : Enbridge submits its Hydrostatic Test Plan for Line 9B to NEB for approval. The plan proposes a strength test at reduced pressure (125 % MOP for 1 hour). Enbridge requests expedited approval.
- **July 24 2015** : NEB reduces its strength test standard ordered on June 18 (Spike hydrotest) to respond to Enbridge demands. NEB amends June 18 Order with AO-001-MO-045-2015 and approves Enbridge Test Plan. No press release by NEB for amended Order, a letter dated July 27 is posted on NEB website.
- **August 22 2015** : Hydrotest conducted in Mirabel, Québec at reduced pressure
- **August 27- Sept 1**: Hydrotest announced in Gananoque, Ontario  
<http://www.leeds1000islands.ca/node/730>

# TYPES OF HYDROTEST

According to Enbridge Hydrostatic Test Procedure\* submitted in 2014 to NEB to satisfy condition 11 of Order XO-E101-003-2014:

- The type of hydrotest selected depends on the goal of the test:
  1. **“A test for public safety** may involve a strength test with a large safety margin between the lowest predicted failure pressure and test pressure.”
  2. **“A test for integrity management program validation** may involve applying current integrity management excavation criteria with no additional safety margin or conservatism.”
- The Canadian Energy Pipeline Association recommends the Spike hydrostatic test to revalidate existing pipelines\*\*
- On July 24<sup>th</sup>, NEB cancels Spike test (type 1 test) and lowers the test pressure as requested by Enbridge to 125% MOP (type 2 test).

\* : PI-11 Hydrostatic Test Procedure. Appendix B of Updated Pipeline Engineering Assessment, June 16 2014, p. 8 ;

\*\* : Hydrotest at a pressure between 100 % et 110 % SMYS for a short duration, from 5 minutes to 1 hour. Cited in Baker J, 2004, p. 5.

# TEST PRESSURES AT GANANOQUE

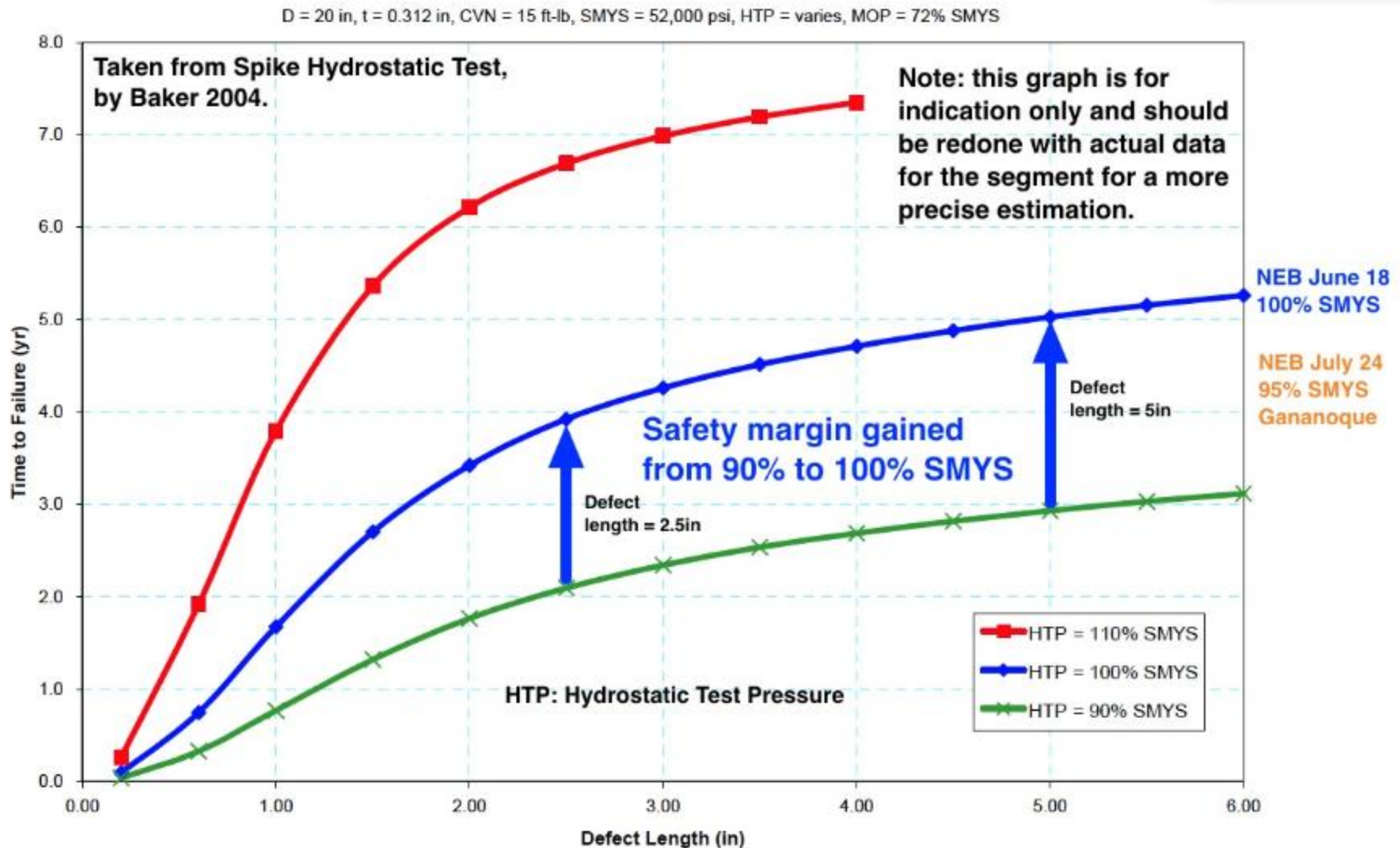
- By the law of physics, the lowest pressure found on a stably pressurized segment is at the highest elevation point (high point)
- Having the minimum test pressure at the high point is thus the only way to ensure that the whole segment is subjected to at least this pressure.
- Pressure can be expressed in three different units:
  - 1) % SMYS : Specified Minimum Yield Strength ;
  - 2) % MOP : Maximum Operating Pressure ; and
  - 3) psi (pound per square inch)
- For the Gananoque segment\* : MOP = 661 psi, 125% MOP = 826 psi and pressure at the segment high point = 827 psi
- The test pressures for June 18 and July 24 are thus :
  - **100% SMYS (high point) = 868 psi = 131% MOP (June 18)**
  - **95% SMYS (high point) = 827 psi = 125 % MOP (July 24)**

\* : From Enbridge Hydrostatic Test Plan, Appendix C, July 22, 2015.

# CONSEQUENCE FOR PIPELINE SAFETY OF LOWER TEST PRESSURE

- At the highest segment point in Gananoque, the pressure difference between NEB June 18 Order and the subsequent modification is a reduction of 41 psi (868 psi – 827 psi), or 5 % SMYS.
- **Lowering test pressure will leave a higher number of serious cracks that will continue to grow during pipeline operation. The consequence is a shorter time to failure for the pipeline, resulting in a lower safety margin.**
- The Spike Hydrostatic Test Report (Baker, 2004) shows that lowering the pressure of the strength test from 100% to 90 % SMYS can diminish the estimated time to failure by half (see graph 6.25 on next slide)

# ESTIMATED TIME TO FAILURE ACCORDING TO TEST PRESSURE



**Figure 6.25 Comparison of Time to Failure vs. Defect Size for Different HTP Levels with an MOP of 72% SMYS**

# WHO WE ARE, WHO WE TRUST

Citoyens au Courant is a group of concerned citizens from the Vaudreuil-Soulanges region, the entry point of Enbridge 9B in Québec. The group, created in 2013, had intervenor status at the 9B NEB hearings and [produced written evidence](#).

But no one in our group is a pipeline safety expert. So we have the next best thing: we talk and exchange emails with US independent pipeline safety expert Richard Kuprewicz, President of Accufacts Inc.

Mr Kuprewicz has produced written evidence for the 9B hearings on behalf of the group Équiterre, a Québec-based non-governmental organization. CV of Mr Kuprewicz and his written evidence are available [here](#). His opinion is often sought by the media, as with the recent Nexen spill in Alberta ([here](#)).

# STATEMENT FROM CITOYENS AU COURANT

- The Spike test ordered by NEB on June 18 2015 (100% SMYS for 1 hour at the segment high point) is the most adequate test specification safety-wise.
- This June 18 2015 NEB Order was the “public contract” that is still being the only Order referred to by Enbridge on its notice letter sent to residents and authorities.
- The July 24 2015 amended Order is considered a breach of the public contract ; it has been adopted for the operator’s convenience at the expense of public safety.
- Citoyens au Courant sent the NEB a request (french) for an administrative review of the July 24 2015 Order, asking for the re-establishment of the strength test specification ordered on June 18 2015.