

**AMERICAN PETROLEUM INSTITUTE**  
**API RP 581 – RISK BASED INSPECTION METHODOLOGY**  
**BALLOT COVER PAGE**

**Ballot ID: 5339**

<b>Title:</b>	Risk-based analysis for steam system – Re-ballot #1
<b>Purpose:</b>	New part to be included in API RP 581.
<b>Impact:</b>	This methodology can be used to assess the risk of steam using equipment and therefore lower the failures in steam systems
<b>Rationale:</b>	Failure of steam systems can result in shutdown of entire process units. A prime example is BP Grangemouth 18" steam line rupture. This failure could have been prevented as the location would have been identified as high risk if this methodology was applied. This methodology can identify the risk associated with steam systems.
<b>Technical Reference(s):</b>	Cane B.J. Risk based methodology for industrial steam systems [Journal]. - [s.l.]: Inspectioneering Journal, 2017. - 23: Vol. 3. Mita,T and Hou,A. Advanced steam system optimization program [Journal]. - [s.l.]: Hydrocarbon Processing, 2018. Institute Fluid Controls ANSI/FCI 69-1-1989 (R2004): Pressure Rating Standard for Steam Traps [Journal]. - [s.l.]: Fluid Controls Institute, 1989. - ANSI/FCI 69-1. Paffel K Water hammer: The number one problem in a steam system [Journal]. - [s.l.]: Plant Engineering, 2011. Abernethy R.B., Ed. The New Weibull Handbook, 4th Edition [Journal]. - Abernethy: Dr. Robert B., 2000. Sanja Milivojevic Vladimir D.Stevanovic, Blazenska Maslovaric Condensation induced water hammer: Numerical prediction [Journal]. - [s.l.]: Journal of Fluids and Structures, 2014. - Vol. 50. Health and Safety Executive - Safety alert STSU2 – 2019, Safety notice to act as a reminder of the phenomenon of condensate induced water hammer, August 2019.

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Tracking Status					
Submitted to Task Group		Submitted to SCI		Submitted to Master Editor	
<i>Date</i>	<i>Resolution</i>	<i>Date</i>	<i>Resolution</i>	<i>Date</i>	<i>Added</i>

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**Proposed Changes and/or Wording** *{attach additional documentation after this point}*

Ballot 5339 passed consensus in January 2021. The proposed changes included with this ballot are in response to the comments provided from ballot 5339.

The following documents have been included with this ballot:

1. Ballot Cover Page: API 581 Steam System Ballot 2 Cover Page
2. Redlined Ballot: Risk-Based Analysis for Steam System – redlined
3. Changes accepted Ballot: Risk-Based Analysis for Steam System –accepted
4. Ballot Resolution Spreadsheet – TWI response – Ballot5339 Comments

Please see the included ballot resolution spreadsheet for final comment responses.

Due to the extensive changes from the last ballot, the entire document is open for comment.