



A-BRN Anti-Flashback Burner (AFB) USCG Approved



AFB's in Lue of Liquid Seals

On March 2, 2017, the Chemical Transportation Advisory Committee's Vapor Control System Subcommittee offered recommendations to CG-ENG-5 on design criteria for accepted AFBs. The recommendations mentioned above were used to augment Policy Letter 02-16 and promulgate Coast Guard acceptance procedures and criteria for anti-flashback burners installed in marine vapor control systems. Manufacturers can submit AFB's for acceptance and posting on the "Accepted Anti-Flashback Burner List" after the following;

The AFB must have a flame arresting cell called a metal crimped ribbon style from a commercial flame arrester manufacturer with an established commercial design used in a flame arrester. The flame arresting cell must be manufactured with appropriate material and crimping gaps.



- Submission to this office should include:
Design specs for the AFB including a drawing, materials, and ribbon gauge
Depth of flame arresting cell
Manufacturer of flame arresting cell
List of sizes used (e.g., diameters)
List of manufacturer-assigned model numbers to which the design applies

A facility that installs an accepted anti-flashback burner from the list instead of a liquid seal will not need an exemption or case-by-case acceptance.



Series-A Flame Arrestors

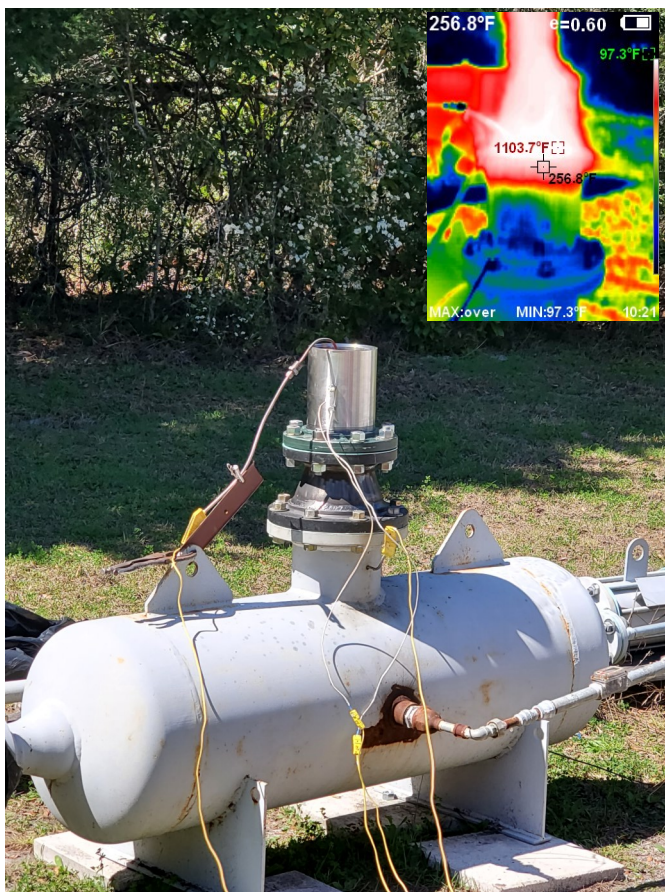
Why are Approved AFBs failing?

The original recommendation was not a "standard"; it gave no minimum design or testing requirements. It also did not establish a minimum burn time at any worse case flow rate or recommend a burn test in which the AFB's should meet.

A standard of sorts would require at least some flame arrester knowledge to test and design a product that would perform. Current companies purchased random crimp ribbon elements without any thought given for performance and stuffed them into a pipe. The current AFB's have been built without the know-how of flame arrester technology and very little guidance from flame arrester manufactures.

After two years of testing multiple manufacturers AFB's in Paradox's laboratory, we found that there are just too many design and quality control issues discovered to list in this cut sheet.

All of the testings conducted were under the exact conditions. A low flow rate was derived by calculating the flow rate per square of an element, and multiplying it by total cross-sectional element area was utilized in all tests. That way, we could maintain the exact testing condition for each element diameter/size tested.



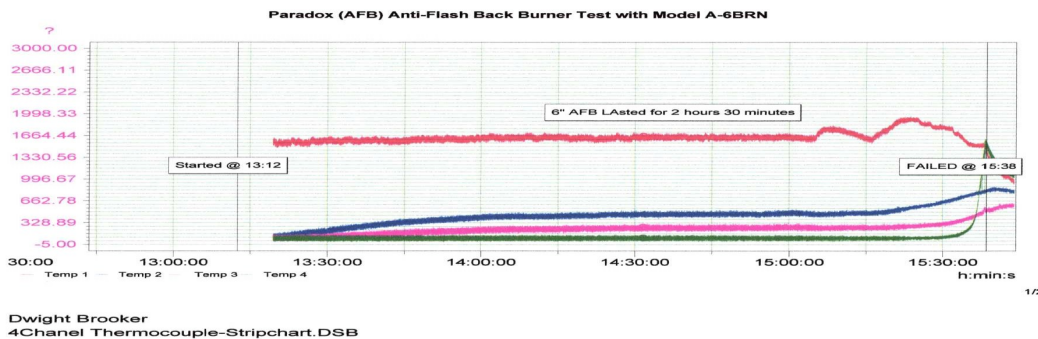
Paradox's A-6BRN AFB Burner on Test vessel.

- Tested with Gasoline
- Lasted 2-1/2 hours before failing
- 4 thermocouples used for data & fail prediction
- 8" NPT connection
- Thermal imaging camera aids in data analysis.

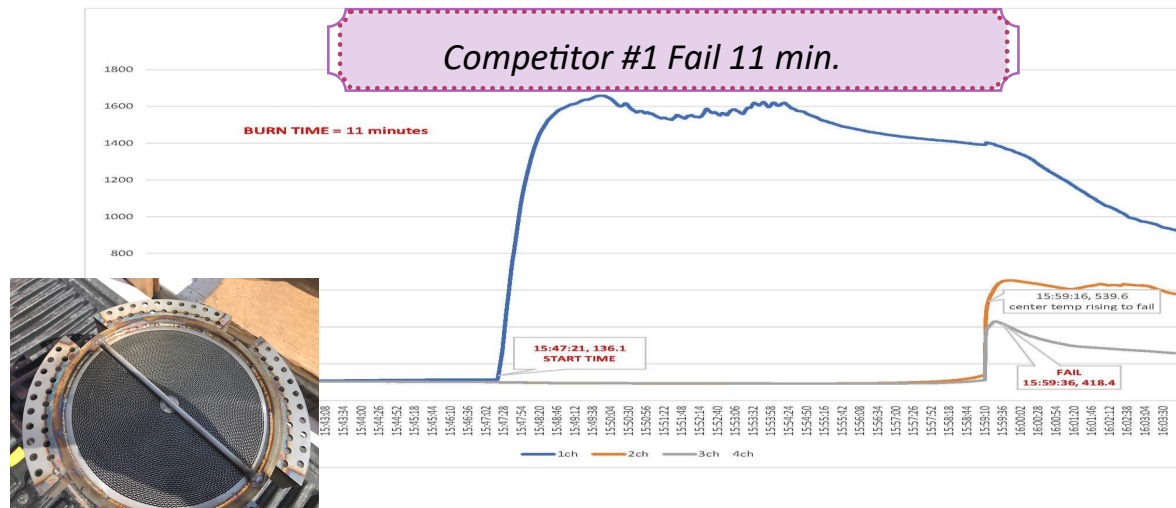
A-6BRN 2-1/2 hour

actual Properties Inc A-4BRN

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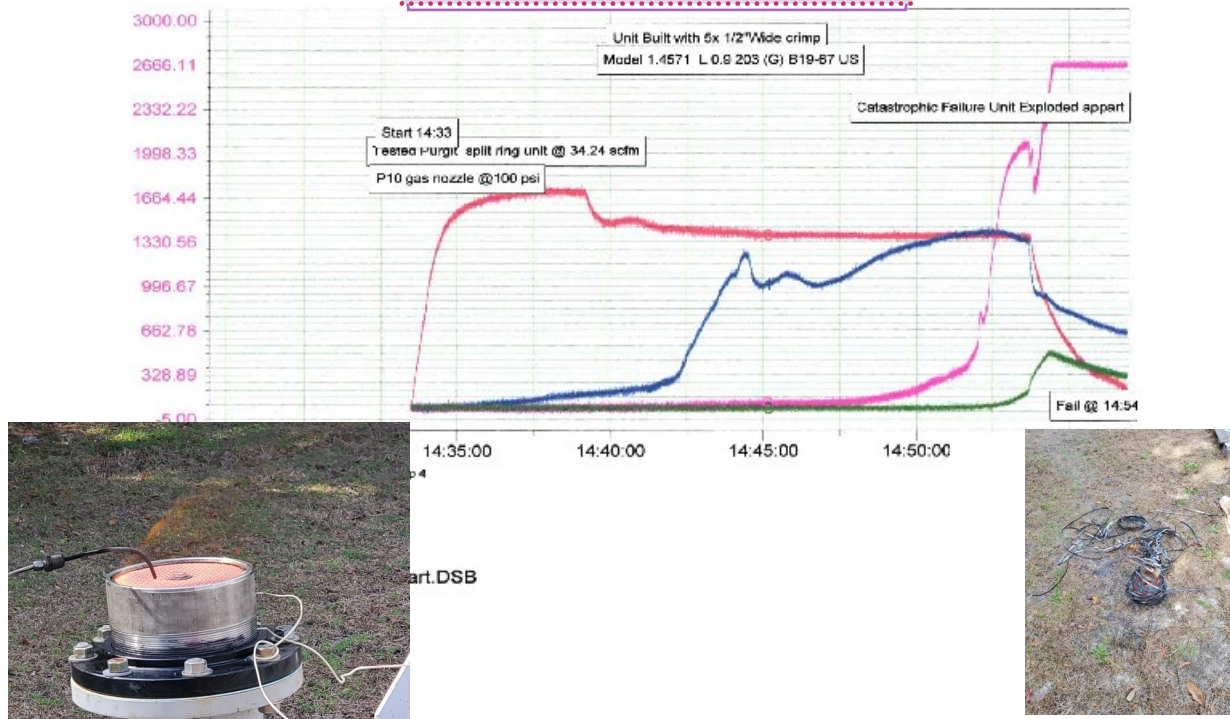


USCG Approved Competitor units under test.



Competitor #2 Fail 21 min

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When tested under the same conditions as the competitors, the Paradox IP AFB's lasted from over 1 hour to 2-1/2 hours depending on size of unit.



The Paradox Intellectual Properties A-BRN Anti-Flashback Burners are the only purpose build AFB manufactured by a flame arrester manufacturer that is USCG Approved. It is built to and tested to an “Internally Developed Standard.”, not a colossal assembly of pipe and random crimp ribbons as is the norm.

The names of the competitor AFBs has been kept confidential out professional courtesy. Frequent failures of all these devices are well known.

Play it safe, “Buy Paradox”