

## FABRICATION NEWS

July 1, 2024

## Impact Testing

### Part 3: When is impact testing applicable? What determines this?

#### BOARDMAN NEWSLETTER

Your positive feedback to the newsletter we have sent out over the years is greatly appreciated. As STEWARDS for your Custom Fabrication needs, providing valuable education to the marketplace and building strong relationships is our primary focus. We promise to be your custom fabrication resource.

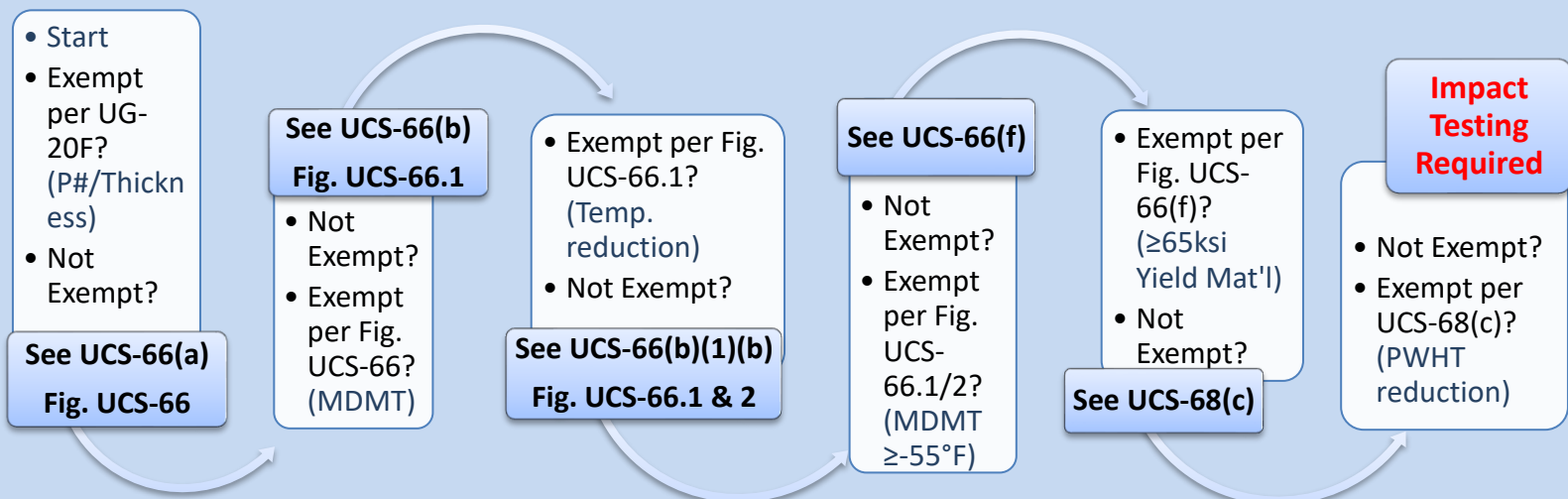
In parts 1 & 2, we explained what Charpy impact testing is, how it is used in industry, and why. In part 3, we will drill down into the applicability of impact testing when working within the ASME code as well as other industry standards such as API-934. In ASME Section VIII, impact testing is always required...unless it is exempted. What does that mean?

When an exemption cannot be obtained, the material used in construction must have:

- Impact testing included in material test reports (MTR's).
- Impact tested welding procedures (WPS's)
- Impact tested welding consumables
- Production impact testing coupons must be welded (UG-84i)

All of the above testing drives up costs and increases the lead time for material. (More on this in the next edition – Part 4)

Due to the increased cost associated with impact testing, the code allows certain exemptions based on criteria of material type, thickness, and assumed operating conditions. Below is a typical sequence Boardman goes through to reduce costs for our clients by achieving an exemption from impact testing on carbon vessels:



The process described above can also be adjusted based on client specifications, which may prevent some exemptions from being applied. Additionally, supplementary specifications and industry standards, such as API-582, API-934 A, C, or E, often impose more stringent requirements. These modifications typically result in increased costs and longer lead times, varying across different material types and product forms. As you may have noticed, this can be a painstaking process, but it is worthwhile because obtaining an exemption can often result in significant cost savings and reduced lead times for our clients.

In summary, when evaluating the need for impact testing, it's crucial to keep in mind that thicker materials and lower minimum design metal temperatures (MDMT) increase the likelihood that impact testing will be necessary. The MDMT is a key factor in determining the impact testing requirements for a given vessel. It's advisable to take a conservative approach while remaining realistic when determining the MDMT. Lowering the MDMT can complicate the procurement of materials, particularly for low alloy steels, so it's important to assess whether subzero temperatures are truly required for the intended applications.

#### Upcoming newsletter on impact testing:

- **Part 4: What is the cost of impact testing?**
  - **Material Costs**
  - **WPS's and supplementary essential variables**
  - **Welding consumables and pre-use testing**
  - **Production Impact Testing Requirements**

## ***BOARDMAN'S ASME Section IX SEMINAR***



Boardman is COMMITTED TO EDUCATION for our clients and our employees. YOU asked for more educational opportunities from Boardman. As ***STEWARDS*** for ***YOUR Custom Fabrication Needs***, you able to turn to Boardman for these great seminars! We look forward to hosting a great group of clients on **October 22-23, 2024** for our **3rd Annual ASME Section IX Seminar**. Each attendee will walk away with a better understanding of Requirements & Mechanics of ASME Section IX, Welding, Brazing & Fusing Qualification, Review of welding processes & variables and Welder & Operator requirements.....and 16 PDH hours! A special thank you to a great partner, Mr. Walter Sperko, an expert and highly respected across the industry. His experience specializes in metal fabrication technology,

including material selection, welding, heat treating, inspection, quality assurance and failure analysis. For questions, or to register for the course, please contact: Taran Wagner – [twagner@boardmaninc.com](mailto:twagner@boardmaninc.com) or 405-601-3987 .

**We would love to hear from you and have an opportunity to quote your next project.**

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