

Repair/Replacement Items Under IWA-4120(e)

Question: We have some flow instrumentation that is tack welded to the inside pressure boundary of Class 3 piping. Under IWA-4120(e) of ASME Section XI 1995 thru 1996 Addenda would these tack welds require an NIS-2 and notification of the ANII?

Steven Brown:

While I don't have the 95 Ed with 96 Addenda available for reference at the moment, my understanding is that any welding (tack welds included) to an ASME Class 3 pressure boundary would require the NIS-2 and notification of the ANII. This is certainly the case in the 2004 Edition I have sitting on my desk.

Hien Do:

Yes, we would require this welding activity to be subject to IWx-4000, therefore, an NIS-2 and notification of the ANII would be required.

George Fechter:

Yes, this activity would be a Section XI repair/replacement (R&R) applicable activity due to welding to the pressure boundary of a component greater than 1" NPS. I'm assuming that the subject component to which the flow instrumentation is welded is greater than 1".

If the component or support thereof to which something is welded or which may be installed via welding is 1" NPS or less, then it would not be an R&R activity.

Mark Ferlisi:

I do not have any direct experience with this question, but I interpret IWA-4120(e) to require compliance with IWA-4000 for this activity because the item is being welded to the pressure retaining portion of a component that is subject to ASME Section XI rules. Thus, it would appear that an NIS-2 Form would be required, as well as ANII notification.

Roy Hall:

In my view – yes, since it is welded directly to the pressure boundary.

Dixon Kerr:

The answer to your question is Yes. While instrumentation is exempt from code requirements, welding to pressure boundary material is not exempt and a tack weld is a weld.

Alex McNeil:

In my experience if we weld (tac or otherwise) to the pressure boundary we would have an R&R Plan, use an NIS-2 or 2A and involve the ANII. The only exception would be if the Class 3 line being welded on met the criteria for small items in IWA-4131. Given it is welding on the inside the criteria is most likely not the case.

Gary Park:

A long time ago, I dealt with tack welds on lock nuts on valve stems that connected the nut to the valve body. I was not going to consider them under ASME Section XI and was quickly coached that any welding to the pressure boundary needs to be documented on NIS-2 and notification of the ANII regardless of it being a tack weld or a full penetration weld. I have stuck to that logic ever since. Hope this helps.

Fred Poteet:

My answer would be yes. Just so happened that the ANII was sitting at my desk when your email came in and he agrees that the answer is yes. Any welding (even tack welds) to the pressure boundary, regardless of ID or OD, would require an NIS-2 and a repair/replacement plan reviewed by the ANII.

Doug Ramey:

The way our ASME Section XI, 2001 Edition with Winter 2003 Addenda repair/replacement program is set up at Columbia Generating Station/Energy Northwest we would have issued ASME work plan to tack weld to pressure boundary of ASME Section III, Code Class 3 piping over 1" NPS. ASME work plan would have required an NIS-2 and notification of the ANII.

The exception would have been if the ASME work plan to tack weld to pressure boundary of ASME Section III, Code Class 3 piping under 1" NPS. In this case ASME work plan would have required an NIS-2, however no ANII involvement.

Mark Shutt:

From your note I am not sure if the question centers on where the welds are or what type of weld is used. I think the key here is how the weld is classified, not where it is.

Section XI does not really address that question, but if you go back to the construction code there is more detail. Section III states that whether the attachment is inside or outside of the pressure retaining portion does not matter. But it does define non-structural attachments and their requirements. Assuming the welds in question are non-structural per the Section III definition, then the attachment of the instrumentation is similar to a lifting lug on a pressure vessel. In that case the weld of the lug to the vessel is not considered a “Code” weld. You have to meet the construction code requirements regarding welder qualification, materials, procedures, etc., but it does not get a weld number or require PSI or ISI. Therefore by extension it would be outside of the Section XI requirements as well.

The kicker is that Section XI simply states that items “that require welding” to the pressure retaining portion be included in the scope of IWA. Does that statement overrule the construction code implied boundaries? Or does “require welding” imply only structural welds? Those are the gray area questions which can be answered either way and be defended. The conservative, safe answer is to complete an NIS-2 and notify the ANII. But if I was defending something already completed, my argument would be that the welds are not required structurally and that per the construction code these are non-structural attachments that do not require code documentation.

I have not had time to search for any past code interpretations on this type of welded attachment – there may already be an answer there.

At any rate, this is my opinion – for whatever that may be worth. Let me know if you find out anything different – I can then add it to the long list of “Code things I thought I understood”.

Rick Swayne:

Any welding on pressure retaining material (including tack welding) is a Repair/Replacement activity. Unless it is smaller than NPS 1, it requires a Repair/Replacement Plan, ANII involvement, and an NIS-2 or NIS-2A Data Report. ASME has published several Interpretations consistent with this position.

I had a similar question from someone this week concerning welding a lifting lug on the outside of a component. The answer is the same.

Ken Thomas:

If the instrument is less than 1 NPS, no. Otherwise, yes. When in doubt notify him.

Ernie Throckmorton:

As to your question, I do not have access to a 95-96 code book, but it has been my experience that the code does not provide one set of requirements for the inside of a pressure boundary and another for the outside. So, a NIS-2 and involvement of the ANII would be required for this situation.

Russell Turner:

Yes they would. While the tack weld is not pressure retaining and is of minor consequence, the Code considers essentially any welding to the pressure retaining boundary to be RRA territory.

Ron Yonekawa:

Most Owners these days use Case N-532 and don't really use the NIS-2. But I think your question is whether an NIS-2 or NIS-2A (if Case N-532 is invoked) is required for the installation of this item. I'm going to say yes as I can't find any exemption to the NIS-2 for this instance. I think the inquirer is asking about the flow instrument that is being tackwelded, but I am thinking more about the tackweld to the pressure boundary.