

Class 2 and 3 Pressure Testing Using IWx-2420(a)

Background and Question:

WF3 has several Category C-H and D-B pressure test examinations that are located within an area that is inaccessible for examination without the removal of a concrete block wall. In the first and second ISI intervals, this block wall was partially removed and rebuilt each period to facilitate the examinations. In this third interval, those same examinations are being labeled as “impractical” due to accessibility and will not be examined unless the block wall is breached for maintenance of other non pressure test activity. The question is; “Can the rules of IWx-2420(a) be applied to categorize these examinations as “impractical” thereby removing them from period pressure test requirements for this third ISI interval”?

Responses:

Jim Boughman (Duke Energy):

This subject came up a few years ago and ASME issued interpretation XI-1-07-34. I think the interpretation may help with your question.

Question (1): If access to a pressure-retaining component (portion of pressure-retaining pipe) is totally blocked by a structure/barrier (no access is available to the surrounding area, no access is available for remote visual equipment, no leakage detection system is installed, and no annulus surrounds the component), is it a requirement of IWA-5240 that a VT-2 visual exam be performed?

Reply (1): No.

Question (2): Is it a requirement of IWA-5240 that a structure/barrier, described in Question (1), if not designed for disassembly, be disassembled in order to perform a VT-2 visual exam?

Reply (2): No.

George Fechter (Southern Company):

I don't agree that IWx-2420(a) can be used to classify an exam as impractical in order to alleviate from having to do it. Rather, IWx-2420(a) just addresses the schedule or components selected for the 1ST being examined with the same schedule/scope to the extent practical. To address the accessibility issue, I would offer the following:

- Are there alternative leakage verification means such as cameras or other type? Look at IWA-5241(c).

- Evaluate the application of buried component logic.
- Submit relief or alternative request for inaccessible portions of piping.

As far justification for relief/alternative, I'm curious as to how long it takes to remove enough of the concrete wall to perform the exam. If only once per period, how hard is it?

Dan Lamond (Automated Engineering Services):

I have always interpreted this as if destructive activities are necessary to gain access, they are not required to meet Code. If flow plugs, access ports, remote examination, etc. is available, then those activities are required per Code. Many of these cases however can use dose and hardship as basis for relief request. I would say that I do not believe 2420(a) is the paragraph to support this topic though. That paragraph is simply dealing with the ability to maintain the progression of schedule through the plant intervals. The basis for my characterization of the requirement though is IWA-5241(a),(b),(c) and for some configurations IWA-9000 for buried components can be applied.

Alex McNeill (Ideal Solutions):

I have never heard of this approach before. Most discussions argue the every period examination requirements of C-H and D-B are the critical attributes that must be maintained. Aside from IWA-5241 (c) [2010], where the alternatives of remote visual equipment, or installed leakage detection systems may be used, I think this would be a relief request.

Gary Park (Ideal Solutions):

To give you a better answer I would need to know the code edition/addenda the plant is using. Since I don't know that I used the 2001 Edition with the 2003 Addenda as most plants are using this.

IWX-2420 is for successive examinations and I personally wouldn't use that paragraph. I would go and look at IWA-5241(c) which states "Components within rooms, vaults, etc. where access cannot be obtained, may be examined using remote visual equipment or installed leakage detection systems."

This tells me that you need to examine the piping. You could also look at IWC-5222 and IWD-5240 to determine if the piping inside the concrete block wall is part of the boundary required to be pressure tested.

Glenn Perkins (True North Consulting):

IWx – 2420 (a) relates to successive interval exams. It doesn't address "inaccessible areas". Therefore I don't see how this applies.

The only way I could think of would be to go for relief from Code requirements. Would have to build a strong hardship case, include alternate ways of proving the integrity (pressure drops) or other means. It would help to know the systems involved and how big a scope are they intending on dropping from exam. Is there exposure involved? If they go the relief route they would need to detail any previous VT-2 problems identified, system pressure, temp, materials, etc. Also specify any alternates to be employed and the fact that exams would be done if the wall was removed for maintenance reasons.

Hope this helps. Provide me more detail of items in yellow above and maybe I can help more.

Frank Schaaf (Sterling Refrigeration):

1. I guess the questions I would ask: Why was it practical to inspect the lines for the first 20 years and not the last 20 years? The next question is what is being inspected, is it just a pipe and welds, some kind of pipe seal or whatever? Is the component important? Can a door be put in wall?

IWC-2420 SUCCESSIVE INSPECTIONS

(a) The sequence of component examinations which was established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical.

Based on the information given I would say take the wall down and inspect during the pressure test. The test is not impractical.

2. What I would recommend is that the pipe be re-categorized as "buried pipe" and do a flow test if it is just pipe and welds

Rick Swayne (Reedy Engineering):

I think there is ample precedent in prior Interpretations to say that a block wall does not have to be removed to perform any required examinations.

See XI-1-10-02 and XI-1-07-38, and especially XI-1-07-34.

Ken Thomas (Cooper Nuclear Station):

They need to file a relief request for these impractical examinations. Since they did them before, it is hard to justify why they are impractical now. They also need to specify what alternatives they will use for the examinations.

Russell Turner (TVA):

I am assuming the walls where the concrete blocks were removed are designed to be permanent and the only reason they would have normally been breached was to replace something behind them. At one plant I worked at, we had a similar situation. It would have required removing some supporting structural steel and breaking cinder blocks which were installed with mortar. There were 10 of these and it would have in-op'd the system with the walls removed. There was also the potential for high radiation at unexpected times. We considered these to be buried piping and invoked IWA-5244, watching the pressure of the system over a 10-minute time frame (pneumatic test) using plant instrumentation. Getting at this system was considered the same as digging up a pipe out in the yard. As for IW(X)-2420(a), this paragraph does not address impracticality, rather it discusses the sequence of examinations. I would address this system under IWA-5244 if at all possible. If not possible, then ask for relief based on the inability to perform the test unless walls were destroyed to get at the system, and the potential for more harm to the plant and personnel safety concerns when removing the wall to do the pressure test. There may still be other alternatives that are possible.

Chuck Wirtz (First Energy Nuclear Operating Company):

I'm in the middle of an outage performing Level III review for IVVI exams and I am way behind so I don't have time to specifically check and see if we have similar issues and how we handle them. I know we have Class 2 and 3 piping buried/encased in cement and we use the buried components rules for it. Not sure if we have any encased in cement where the walls or portions of the enclosure are considered removable. I have used the IWx-2420(a) rules for changing the sequence of exams ...but usually just to switch components/weld exams from one to another because it was no longer "practical" to exam the one that was examined last time ...due to a change in dose or access conditions. We have always run such changes in the sequence of exams through our ANII and he has not typically had a problem with it.

Ron Yonekawa (Bechtel):

I am far from an expert on this subject, and therefore do not have much input. But I did find an interpretation that sheds a little light on whether the Owner can call the accessibility of these welds practical. See below:

Interpretation: XI-1-98-46
Subject: IWB/C/D/E/F-2420, Successive
Inspections (1989 Edition)
Date Issued: March 5, 1999
File: IN98-027

Question: When establishing a successive inspection interval ISI program, is it a requirement of IWB/C/D/E/F-

2420(a) to follow the selection and sequencing of component examinations from the first inspection interval if it is not practical, giving consideration to differences in Section XI Code criteria?

Reply: No. It is the Owner's responsibility to determine what is practical.

Of course, the NRC can beg to differ on that. Also, given that the Owner has repeatedly removed that same wall several times before, I wonder how believable it is that removal of that wall has now become "impractical".