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Sent: Tuesday, February 02, 2010 3:58 PM
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Subject: TI-2515/173 and NEI 07-07 Communication Logic
Attachments: 091112_RLC_Ocone H-3 Leak.doc; 100107_RLC_ Interpretation of the NEI 07.doc
Categories: Groundwater

All,

This email is a response to an item mentioned at the December 2009 Counterpart Call. At issue was the Ocone decision to withhold communications regarding a water sample that contained slightly less than 20,000 pCi/l tritium (see attached internal NRC Correspondance). This sparked some discussion regarding when communications are "required/expected" per NEI 07-07. The attached summary is an interpretation of the NEI communication logic. This summary is based on discussions with an NEI representative who also is an industry expert on the HP/Chemistry aspects of tritium in groundwater.

The attached document indicates Ocone has an existing H-3 plume on site. They have been tracking the plume for some time with quarterly ground water samples. Over time, they have seen increasing concentrations of H-3 in monitoring well samples. In mid-November, the samples from these wells were detecting H-3 just below 20,000 pCi/l. As of mid-November 2009, they apparently had not initiated communications about this contamination. They were withholding communications pending a well water result greater than 20,000 pCi/l (which was expected in January 2010).

Ocone suspects the radwaste line may be leaking because they are installing 16 new wells along that radwaste piping. Based on this information and the attached interpretation of NEI 07-07, they may use the communication protocol in NEI 07-07, Section 2.2.b, provided they have not actually observed leakage from the pipe (~~or~~^{if} there is significant uncertainty about the source of the radioactive material detected). That means they do not have to initiate communications until the monitoring well sample exceeds the ODCM REMP Reporting Level (which is 20,000 pCi/l in their case).

If a plant observes water leaking from a pipe, valve, system, or component (or is reasonably confident water is leaking or has leaked from a pipe, valve, system, or component), then they would be required to use the communication protocol in NEI 07-07, Section 2.2.a. That section would require the licensee to initiate communications before the end of the next business day, even if the H-3 concentration was less than 20,000 pCi/l.

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Internal NRC Correspondance

Oconee - New Groundwater Monitoring Wells being installed to track tritium plume

The contract has been signed to start drilling 16 additional permanent groundwater monitoring wells on-site as well as ~55 hand-augured wells alongside the liquid radwaste release line next week in an attempt to characterize the plume of tritiated water that exists on-site. Based on the most recent quarterly samples which were just under the 20,000 picoCi/L **(which is the NEI reporting threshold for tritium concentrations)**.

The licensee expects to initiate the communication protocol no later than January 2010. Geoff Ottenberg (Region-II) has the lead from the Resident Inspector office and will be providing a package to Bob Trojonowski (Region-II) in preparation of communications resulting from when they exceed the NEI threshold. (Continue to follow and forward to Tritium Groundwater Issues Group (Richard Conatser and Steve Gary), assigned to Dave Garmon-Candelaria).

Interpretation of the NEI 07-07 Communication Protocol

Deciphering When Communications are Required

Richard L. Conatser
2-Feb-2010

Regional inspectors may find the following information useful when performing TI-2515/173 on groundwater protection. Different people may interpret NEI 07-07 in different ways. The following 4 key points may clarify the intent of NEI 07-07. In particular, these 4 key points describe the circumstances that would initiate the NEI communication protocol.

This does not constitute any official NRC position, and is intended as a tool for persons trying to decipher when communications are required by NEI 07-07. NOTE: If you are aware of a different interpretation of the NEI initiative, please bring it to my attention so it can be discussed with NEI (and this document can be revised accordingly).

Summary:

Per NEI 07-07, there are 4 key points to remember prior to initiating communications.

1 Licensee's Prerogative and Special Agreements

A licensee may choose to initiate communications with local and state officials at any time and for any circumstance (e.g., leak, spill, or water sample result) per the licensee's prerogative or per the licensee's special agreement with local and state officials. The use of the word "special" in the previous sentence means any agreement with local or state officials that goes beyond the generic communication protocols in NEI 07-07. See NEI 07-07 Section 2.2.a.iii.

2 Initial Discovery and Confirmation

If the licensee does not initiate communications per 1 above, a licensee must (per NEI 07-07) make notifications after the initial confirmation (or "discovery") of a new plume, spill, leak, or source of contamination (meeting the criteria in 3 or 4 below). After the licensee's initial discovery, confirmation, and communication of a radioactive plume, spill, leak, or source of contamination, subsequent samples taken to further characterize the event would not automatically necessitate additional communications with local and state officials. The notification is tied to the confirmation of the initial discovery.

3 Samples Greater Than ODCM REMP Reporting Levels

If the licensee does not initiate communications per 1 above, then if any of the water samples listed below (a, b, c, or d) exceeds a REMP Reporting Level (typically 20,000 or 30,000 pCi/l for H-3 per ODCM), the licensee should initiate communications with local and state officials after initial discovery (as described in 2 above) but before the end of the next business day (per NEI 07-07, Section 2.2.b.).

- a. offsite groundwater (piezometer tube, monitoring point, or well)
- b. offsite surface water,
- c. on-site surface water body (hydraulically connected to groundwater) (not including "puddles"),
- d. on-site ground water (that could be drinking water)

4 Samples Less Than ODCM REMP Reporting Levels

If plant-related activity (e.g., tritium) is detected in a groundwater sample and it is below the ODCM REMP Reporting Level (e.g., 20,000 or 30,000 pCi/l H-3, depending on the ODCM), then the licensee is "required" (by the NEI Initiative) to contact local and state officials after initial discovery (per 2 above) and before the end of the next business day if the leak or spill is directly observed (and meets the volume, activity, and location criteria in NEI 07-07, Section 2.2.a).

Supporting Details:

Here's the supporting information for the above summary. I called Kathy Yhip. She works at SONGS and she has assumed some of George Oliver's (now retired) duties for NEI. Kathy was on the committee that wrote NEI 07-07. We talked about NEI 07-07 and the logic outlined in NEI 07-07 for initiating communications with local officials with respect to water samples from monitoring wells or other locations. The following information is a little tedious and contains a lot of detail, so if you choose to read on, bear with me. Here is what I found.

Look at Objective 2.2 from NEI 07-07. Objective 2.2 mentions two categories where communications are required. Those 2 categories are:

- (1) **leaks or spills** into groundwater, and
- (2) **water samples** exceeding ODCM REMP reporting levels.

NEI 07-07 uses the 2 categories above as part of a logic to determine if the licensee should initiate communications with local and state officials. NEI intended these two categories to be separate and distinct branches in the communication logic, and as far as the NEI communication logic is concerned, there is no connection between these 2 categories. That means that as far as the communication logic is concerned, if the licensee discovers a plume on site, the licensee doesn't have to assume it came from a leak or spill (e.g., it may be from rainout).

The licensee would use the leak or spill criteria in NEI 07-07, Section 2.2.a, if a leak or spill is directly observed. Otherwise, if a licensee has a water sample result (and a leak or spill is not directly observed), NEI 07-07 allows licensees to use NEI 07-07, Section 2.2.b.

I have found that sections 2.2.a and 2.2.b are a little confusing. The confusion may stem from the fact that just about all samples analyzed are water samples. Additionally, if a water sample contains tritium, does that mean that there is a potential for a leak? So, when do you implement 2.2.a and when do you implement 2.2.b? To make this more clear, consider the following sequence of events.

- A. A leak or spill hits the surface of the ground.
- B. It eventually seeps into the ground.
- C. It then migrates through the unsaturated zone.
- D. It enters the saturated zone.
- E. It causes tritium to appear in a groundwater sample (collected from groundwater monitoring well).

This sequence of events begins with a leak (or spill) and ends with a contaminated groundwater well. In reality, all these events are connected. Although we know this sequence of events may occur, NEI indicated this sequence should not be automatically assumed when evaluating if communications should be initiated. As a result, if the licensee observes a leak or spill, the licensee may use NEI 07-07 Section 2.2.a for the reporting criteria (if the leak or spill also meets the volume, activity, and location requirements of Section 2.2.a). If the licensee discovers detectable tritium in a monitoring well sample, but does not observe a leak or spill, the licensee may use NEI 07-07 Section 2.2.b for the reporting criteria (if the sample exceeds the activity requirements of Section 2.2.b).

An over-riding factor in the communication protocol is that the licensee is only "required" (by NEI 07-07) to initiate communications once for a single event. That communication should occur after the initial discovery and confirmation of a sample result, but before the end of the next business day. Subsequent samples taken after the initial discovery and confirmation of an event would not (per the NEI initiative) automatically trigger additional communications. (Of course, if the additional samples were "newsworthy" and met the criteria in 10 CFR 50.72(b)(2)(xi), then communications would be required, but I'm limiting this discussion to NEI 07-07 "requirements"). So, for example, if a tank leak is observed (and activity in groundwater is confirmed at 2,000 pCi/l) and the licensee initiates the communication protocol, then that leak has been communicated. If later, a nearby monitoring well indicates 21,000 pCi/l H-3, the licensee wouldn't necessarily be "required" (per NEI 07-07) to initiate the communication protocol a second time if that was just affirmation of the same event.

Here is a final caution. Don't get lost in the details. The overarching objective of NEI 07-07 is for the licensee to foster good communications with local, state, and federal officials. Whatever arrangement the licensee has with local, state, and federal officials, as long as it is clearly communicated and understood by all involved, the licensee satisfies the main objective.