

December 19, 2007

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
U.S. ARMY) Docket No. 40-8838-MLA
)
(Jefferson Proving Ground Site))

NRC STAFF RESPONSE IN OPPOSITION TO PROPOSED FINDINGS AND
CONCLUSIONS OF SAVE THE VALLEY AND OF THE U.S. ARMY

I. INTRODUCTION

Pursuant to the Memorandum and Order (Scheduling Further Filings) dated October 30, 2007, ("October 30 Order") as modified by the Order dated November 29, 2007, the Staff of the NRC ("Staff") hereby files its response in opposition to certain proposed findings of fact and conclusion of law presented by Save the Valley, Inc. ("STV") and the U.S. Army ("Army"). For the reasons stated herein, the Staff asserts that the evidentiary record does not support the issuance of some of STV's and the Army's proposed findings and conclusions.

II. BACKGROUND

On December 7, 2007, STV filed its "Proposed Findings of Fact, Conclusions of Law, and Initial Decision of Intervenor Save the Valley, Inc." ("STV Proposed Findings"). STV proposed that the Board "affirm issuance of License Amendment No. 13 and the associated alternate schedule for submittal of a JPG DU site decommissioning plan, subject to all required conditions and modifications to the FSP included in our Findings and Conclusions." STV Proposed Findings at 79.¹ STV proposed that the Board enter findings of fact for 1) the need for

¹ STV did not number its paragraphs, so citations to its proposed findings refer to page numbers.

and the timing of a seepage run study, (*id.* at 34-40); 2) needed additional measures to identify significant karst features, (*id.* at 40-48); 3) the timing of and the need for modifications to sampling measures for significant karst features, (*id.* at 48-52); 4) the need to distinguish depleted uranium (“DU”) and natural uranium in environmental sampling of various media, (*id.* at 53-56); 5) the limitations of alpha spectroscopy (“AS”) methodology, and the need for and nature of alternate methodology, (*id.* at 56-60); 6) unexploded ordinance (“UXO”) as an impediment to hydrogeologic characterization activities proposed in the Field Sampling Plan (“FSP”), (*id.* at 60-62); 7) UXO as an impediment to additional hydrogeologic characterization activities proposed by STV, (*id.* at 62-64); 8) the need for additional biota sampling, (*id.* at 64-67); 9) the need for air sampling, (*id.* at 67-69); and 10) the nature and scope of site modeling, (*id.* at 69-74).

On December 7, 2007, the Army also filed its proposed findings and conclusions (U.S. Army's Proposed Findings of Fact and Conclusions of Law, and Order in the Form of an Initial Decision, December 7, 2007) ("Army Proposed Findings"). The Army proposed that the Board issue an order resolving STV's contention in favor of the Army. *Id.* at ¶ 92.² The Army proposed findings on 1) statement of the issue, 10 C.F.R. § 40.42(g)(2) criteria, and general topics, (*id.* at ¶ 28-43); 2) biota and air sampling, (*id.* at ¶ 44-60); 3) karst geology, well locations, fracture trace analysis (FTA) study, electrical imaging (EI) study, UXO Issues, (*id.* at ¶ 61-72), and 4) soil, water, and sediment sampling and sampling analysis methods, (*id.* at ¶ 73-86). The Army also proposed Conclusions of Law, (*id.* at ¶ 87-91).

² The Army numbered its paragraphs except for paragraph 92, but not its pages, so citations to its findings refer to paragraph numbers.

III. GENERAL CHALLENGE

Throughout STV's Proposed Findings, the findings are primarily focused on the content of the FSP rather than the alternate schedule. Specifically, STV proposed that the Board condition the license amendment to require the Army to include STV's own proposed site characterization activities in the FSP. See e.g. STV's proposed additional biota sampling, STV Proposed Findings at 67. Such proposed conditions are premature because as the Board noted, STV will have an opportunity to challenge the site characterization of the JPG site in the decommissioning plan. Tr. at 120-121.

IV. RESPONSE STANDARD

The Board stated each party shall file and serve its proposed findings of fact and conclusions of law, and that each proposed finding shall include a specific reference to the portion or portions of the evidentiary record of the proceeding that is deemed to provide support for the finding. October 30 Order at 1. The Board will give no consideration to a proposed finding that does not include a reference. *Id.* A response in opposition to one or more of the proposed findings and conclusions of another party should state with particularity the reasons for the assertion that the evidentiary record will not support issuing the challenged findings. *Id.* at 1-2. Merely noting that there is conflicting evidence on the matter considered in the challenged finding(s) will not suffice. *Id.* at 2.

V. CHALLENGE TO STV PROPOSED FINDINGS

1) The Need for and the Timing of a Seepage Run Study

Without citation to the evidentiary record, STV stated that performing a seepage run allows three fundamental elements of site characterization for a karst area to be identified. STV Proposed Findings at 35-36. The Board should give no consideration to the unsupported overall assertion that a seepage run identifies fundamental elements of site characterization.

STV proposed this finding:

Second, the conduits that are identified in a seepage run are *inherently significant karst features* because they are ones that are by observation known to connect the groundwater and surface water systems and to *convey enough water to impact contaminant transport* in and from the area (STV Exhibit 1, Norris pre-filed rebuttal, at 25),

STV Proposed Findings at 36 (emphasis added).

The Staff asserts STV's proposed finding is not actually supported by the cited evidence states. STV's witness, Mr. Norris did not address what are "inherently significant karst features," nor did he address when a conduit will "convey enough water to impact contaminant transport." See Norris Rebuttal, STV Exh. 1 at 25. Instead, Mr. Norris stated that the FSP site characterization should be modified to investigate the potential for a deeper karst network, and that seepage runs should be done before additional characterization wells are installed. *Id.* Accordingly, the evidence cited does not support any finding that a feature is "inherently significant" or is conveying "enough" water to transport contaminates.

STV further proposed:

Third, the seepage points represent ideal monitoring or testing locations for procedures such as tracer studies to identify the source areas of stream gains or the discharge points of stream losses, which is fundamental to characterizing transport through the karst system (Transcript, at 262-263).

STV Proposed Findings at 36.

The Staff again finds that STV's proposed finding is unsupported by the actual evidence. STV incorrectly implies that the transcript supported the assertion that tracer studies are *fundamental* to characterizing transport through a karst system, and that seepage points represent ideal locations for monitoring or testing locations. See *id.* The transcript merely reflects the following:

MR. NORRIS: If it's flowing at a normal or higher rate, you may not be able to detect it. If it's flowing at low rates, you can do

it. You identify -- I mean, were it my program the stream surveys would have been the first step.

JUDGE ABRAMSON: Okay, but they're now going on.

MR. NORRIS: And identify where the stream is losing water, then do a dye trace test where you put dye in the water going in and see if it's coming out the stream a hundred yards further away or a half a mile further away or two miles further away to be sure that it isn't the stream itself or the valley that the stream is on that is causing that. But then you start at that point and you are -- literally you have a recharge point in some kind of a conduit at that point and you start mapping away to find out where that water is going.

Tr. at 262-263.

As shown above, the evidence put forward by STV fails to support that tracer studies are fundamental to characterization. Accordingly, the board should make no such finding.

STV Proposed License Conditions

STV proposed that the Board condition the license such that seepage run studies will be performed and the results of those studies will be integrated into the groundwater characterization of the site. STV Proposed Findings at 39. STV also proposed a requirement that the Army make available to both NRC Staff and STV the actual staging data, in electronic format. *Id* at 39-40.

The Staff finds no evidentiary support for STV's two conditions, and STV has failed to provide citations to show why conditions are warranted for approval of the alternate schedule.

2) Needed Additional Measures to Identify Significant Karst Features

STV mischaracterizes the evidence when STV stated that "In order to characterize the DU impact area, all types of karst features that may be found on the site, not just non-fracture-controlled karst features, must be characterized (Transcript, at 275-276)." STV Proposed Findings at 43. Nowhere in the cited evidence is there any testimony to support the finding that all types of karst features must be characterized. See Tr. at 275-276.

STV continued to mischaracterize the transcript by proposing the following:

Below-surface cave systems have been found in the same strata in similar geologic setting (STV Exhibit 1, Norris pre-filed rebuttal, at 28-29). These karst features have been successfully mapped using a combination of electrical resistivity surveying and reflection seismic surveying when both surveying techniques are performed in a grid system over the area of interest; a system that could be used at JPG. (Transcript, at 276).

STV Proposed Findings at 43

The Staff review of the hearing transcript at 276 shows that STV witness, Mr. Norris, stated that he would look for features at STV by using an electrical technique run on a grid system and a seismic technique, but Mr. Norris presented no evidence of previous successful uses of these techniques to locate caves in similar settings. See Norris, Tr. at 276.

Because STV has asserted conclusions beyond what is supported by the record, the Board should not issue findings that all types of karst features must be found, nor that STV witness, Mr. Norris', proposed technique will be successful.

STV Proposed License Conditions

STV proposed

The Board finds that the FSP must be modified to include methodologies sufficient to identify all known and reasonably anticipated karst conduit systems, and that those karst systems be evaluated in a manner that allows them to be mapped from the DU impact area to their locations of discharge.

STV Proposed Findings at 48.

The record does not support such a modification, and STV has failed to cite how its proposed modification addresses, or is even relevant to, an alternate schedule for the submission of a decommissioning plan requested under § 40.42(g)(2).

3) The Timing of and the Need for Modifications to Sampling Measures for Significant Karst Features

To support its desire to modify the timing of some sampling activities, STV has paraphrased the testimony beyond what is reasonable. See STV Proposed Findings at 49-50 and references cited therein. For example, citing Mr. Norris's pre-filed rebuttal testimony at 15, STV states that site hydrology cannot be interpreted until individual well testing to evaluate inter-well connections is done, and that no inferences about needed additional testing can be drawn. STV Proposed Findings at 50. However, STV's cited testimony reveals no discussions about when site hydrology can be interpreted, nor when inferences regarding additional testing can be drawn. See Norris Rebuttal, STV Exh. 1.

STV Proposed License Conditions

STV proposed that two non-specific license conditions be added to the approval of the alternate schedule: First, STV proposes that characterization measurements begin as soon as possible at each monitoring location, measurements be taken during each sampling period for all monitoring locations that are available, and measurements continue to be made for as long of a period of time as possible; and second, that time-variable characterization data such as water elevation in wells, and stream stage and stream flow data be continually gathered until completion of an acceptable decommissioning plan. STV Proposed Findings at 52. STV's two proposed license conditions are not targeted to the alternate schedule request criteria of § 40.42(g)(2). STV does not explain how the use of this data serves the requirements of § 40.42(g)(2). See *id.* at 52. STV provides no citations to the evidentiary record to support why its proposed license conditions would be necessary under § 40.42(g)(2). See *id.* at 51-52.

4) The Need to Distinguish Depleted Uranium and Natural Uranium in Environmental Sampling of Various Media

STV notes at the outset of its proposed findings that the FSP does not provide the sampling and analysis procedures and data objectives for uranium sampling and analysis. STV Proposed Findings at 53. Faced with this, STV assumes that the procedures will match those of the environmental radiation monitoring plan ("ERMP"), and then STV attacks the ERMP,³ even though the Board has clearly stated that the proceeding does not provide a vehicle for challenges to the adequacy of the ERMP, which is the fulfillment of an independent monitoring obligation imposed upon the Licensee as part of its existing materials license. U.S. ARMY (Jefferson Proving Ground Site) LBP-06-27, 64 N.R.C. 438, 449 (2006).

STV incorrectly attributes testimony from the Army on the commercial availability of a method of distinguishing DU from natural uranium to the Staff. See STV Proposed Findings at 55 (citing Tr. at 305).

STV Proposed License Conditions

STV proposes a new license condition that the Army be required to pursue custom laboratory services, and that the Board finds this condition not to be onerous. *Id.* at 56. This condition does not have any supporting evidence cited by STV, and is contrary to the only substantive testimony stating that such services are not available. Tr. at 305.

STV proposes a new license condition to require that the FSP include a method to determine the proportion of natural uranium to DU in contemporary environmental samples. STV Proposed Findings at 56. The testimony clearly established that no analytical method can

³ *E.g.*, STV Findings at 54 ("The methods that have been used in the ERM are inadequate to meet these needs, having resulted in data from which one cannot determine the proportion of depleted uranium (Transcript, at 301)").

determine the percentage of DU in a sample, rather a sample can be called “natural” or “depleted”, but cannot be apportioned between the two. Tr. at 296-299. STV does not cite any regulation that would require the Army to gather such information to apportion a sample as a percentage DU or percentage natural for an alternate schedule request under § 40.42(g)(2).

5) The Limitations of the Alpha Spectroscopy Methodology, and the Need for and Nature of Alternate Methodology

Again, STV acknowledges that it cannot assess the adequacy of sampling and analysis because details are not part of the FSP. STV Proposed Findings at 56-57. STV's proposed finding is an attack on the ERMP. See *id.* at 57.

STV Proposed License Conditions

Without evidentiary support, STV would have the Board make a finding on laboratory counting measurements "regardless of error bars and statistical arguments." STV Proposed Findings at 59. STV has cited no case law nor evidence that would support the Board choosing to disregard appropriate scientific analysis to issue this finding. See *id.*

STV proposes, as a license condition, that a future addendum to the FSP include an unspecified procedure "to establish the concentration of U235 as an independent check of AS [alpha spectroscopy] methods used to compare concentrations of U234 and U238." *Id.* at 59-60. STV would also impose unspecified modifications to alpha spectroscopy to achieve a 95% confidence level for the presence of DU in environmental samples with a ratio of U238/U234 of 3.0 or higher. *Id.* at 60.

STV fails to provide evidentiary support for its proposed two conditions, and STV does not state how, if at all, the confirmatory alpha spectroscopy data are to be used in the approval of an alternate schedule request. The Staff asserts that STV's proposed findings and modifications are not supported by the evidentiary record.

6) UXO as an Impediment to Hydrogeologic Characterization Activities Proposed in the FSP

In discussions on unexploded ordinance, STV states, without citation to the record, that "controversy has continued among the parties as to whether UXO has inappropriately and unnecessarily limited the nature and location of the hydrogeologic characterization activities included in the FSP." STV Proposed Findings at 60. STV provides no evidence of this "controversy," when it presents proposed positions of itself, the Army, and the Staff. *See id.* at 61-62. Therefore, no finding on this issue is necessary.

7) UXO as an Impediment to Additional Hydrogeologic Characterization Activities Proposed by STV

STV proposes a finding that STV's additional hydrogeological characterization activities may be done without modification for UXO concerns. *Id.* at 64. Such a finding on STV's proposal is well beyond the scope of this hearing; that is the Army's application for the alternate schedule request. The testimony cited by STV does not contemplate the potential UXO effects on the STV's proposed additional hydrogeological characterization activities. *See id.*

8) The Need for Additional Biota Sampling

In calling for additional biota sampling, STV offered testimony that, if only one species was sampled, it should be one that is a better indicator of DU movement and "lower in the food chain" than deer, for example squirrels or rabbits. STV Proposed Findings at 65 (citing Testimony of Dr. Henshel, STV Exhibit 2 at 13). The Staff notes that STV does not provide any scientific evidence or explanation why squirrels or rabbits would be considered lower in the food chain than deer. *See id.*

STV Proposed License Conditions

STV Proposes the following license condition:

Accordingly, the Board will condition its approval of the requested license amendment on the Army's sampling either rabbit or squirrel as a terrestrial species, either crayfish or molluscs as an aquatic species, and turkey as a bird species.

STV Proposed Findings at 67.

This proposed license condition requiring rabbits or squirrels to be sampled is not supported by the evidence, where Dr. Henshel's own testimony states that deer are an appropriate terrestrial species to sample. Henshel Testimony at 12-13, STV Exh. 2. STV's proposed license condition is inconsistent with Dr. Henshel's testimony where she states:

Based on virtually all standard risk modeling guidance in the literature (for example, standard texts by Glen Suter et al.) and produced by federal and state governments (for example, the complete set of risk related guidance available through the EPA websites), for an open environmental exposure situation such as exists at JPG, there should be at least one airborne species (e.g, a bird or flying insect), one aquatic species (e.g., a crayfish), and one soil-based species (e.g., an earthworm or slug), in addition to a terrestrial species (eaten by humans) like deer.

Id. Moreover, STV's proposed findings and license condition for biota sampling do not follow from the evidence that the deer were sampled because they are the only significant completed pathway to humans, and abiotic media outside of the DU impact area (e.g. surface water) have not been shown to contain DU. McLaughlin Testimony at 10-11, Staff Exh. 1. STV's proposed finding does not cite a regulatory requirement for biota sampling to support an alternate schedule request. See STV Proposed Findings at 67.

9) The Nature and Scope of Site Modeling

STV's discussion of site modelling confuses information that may be included in a decommissioning plan with information needed to change the schedule for submittal of a decommissioning plan. See STV Proposed Findings at 70 ("These [groundwater data] are not

optional parameters for groundwater assessment [in] a decommissioning plan . . ."). STV's focus on the final decommissioning plan is premature; the Army is collecting groundwater data as it performs site characterization.

Further, STV makes the unsupported conclusion that the groundwater pathway will be removed from consideration as a potential pathway for DU transport. STV Proposed Findings at 71. Similarly, STV states that the Army and Staff have agreed "to defer the collection of the required [groundwater] data." *Id.* at 71. STV fails to cite or specify what regulatory requirement controls the timing of the collection of these data. *See id.* Inherent in a request for an alternate schedule under 10 C.F.R. § 40.42(g)(2) is the deferral of the development of a decommissioning plan. The regulations simply do not specify incremental steps needed to develop a decommissioning plan during an alternate schedule.

STV Proposed License Conditions

STV proposes, as a final license condition, that for the Army to receive a new date for submittal of a decommissioning plan, the Army must propose, and the Staff approve, a modeling approach that is capable of assessing the fate and transport of DU groundwater contamination in the karst environment at JPG. STV Proposed Findings at 74. STV fails to explain how the review and approval of this yet-to-be-developed modeling approach is within the scope of § 40.42(g)(2). STV's proposed conditions instead focus on the known limitations of RESRAD rather than focusing on the characterization of the JPG site.

VI. ADDITIONAL CONCERN WITH STV'S CONCLUSION

STV offered its overall conclusion that the FSP "does not meet two of the three requirements of 10 C.F.R. § 40.42(g)(2)." *Id.* at 75. To support its claim that two requirements of § 40.42(g)(2) were not met, STV stated,

First, the FSP does not include all of the tests and will not provide all of the information required to evaluate the Army's restricted

release decommissioning plan and thus "necessary for the effective conduct of decommissioning operations." Second, it is very unlikely that the FSP, absent this decision, will be further modified by the Army in the future to include all of the requisite tests and provide all of the requisite information and certain that the required modifications will not be made by 2011.

STV Proposed Findings at 75-76.

STV's "second" sentence simply does not go to any requirement of § 40.42(g)(2). The "first" sentence is referring to the information that the Army will need during its decommissioning process. Specifically, STV is saying that the FSP must include all of the information needed during decommissioning from 10 CFR § 20.1403 and 10 CFR §§ 51.45 and 51.50. STV Proposed Findings at 76. As previously argued by the Staff, the alternate schedule will provide time to collect information that is necessary for decommissioning. 10 CFR § 40.42(g)(2) does not require the FSP to describe all of the information that would be sufficient for a decommissioning plan. See NRC Staff's Proposed Findings at 16.

VII. RESPONSE TO PROPOSED FINDINGS FILED BY THE ARMY

The Army proposes the following finding in paragraph 42:

The Board finds that there is no evidence that the iterative process being implemented by the Army in the performance of the FSP cannot lead to sufficient site characterization to support a decommissioning plan at the end of the five year alternate schedule.

Army Proposed Findings, ¶ 42.

In support of this proposed finding, the Army states, "STV presented *no evidence* the iterative process being implemented by the Army in the performance of the FSP cannot lead to sufficient site characterization...". Army Proposed Findings, ¶ 36 (emphasis added). Rather than agreeing that there is no evidence, it is the Staff's position that the testimony provided by Mr. Norris and Dr. Henshel does, to a limited extent, challenge the ability of the FSP to lead to sufficient site characterization. See *e.g.* Tr. at 236-237. However, the evidence provided by the

Staff and the Army is more credible and outweighs the evidence provided by STV through the testimony of Mr. Norris and Dr. Henshel. By relying on the expertise and experience of the Staff and Army witnesses, the Board should find that the FSP can lead to a sufficient site characterization to support a decommissioning plan as stated in the Staff's Proposed Findings. See, NRC Staff Proposed Findings, ¶ 253.

The Army submits a proposed finding which states in part,

Evidence presented by both the Army and the NRC Staff establishes that no further biota sampling is necessary under NRC regulations to support decommissioning activities.

Army Proposed Findings, ¶ 58.

This finding is not supported by the evidence cited by the Army. The Army quotes Dr. McLaughlin in paragraph 50, which states, "It is the NRC Staff's position that it is unnecessary to require the Army to conduct additional biota sampling *at this time* in the FSP to protect against radiological risks to the public health." Army Proposed Findings, ¶ 50 (emphasis added). The NRC Staff's position and the evidence cited by the Army here support a finding that no additional biota sampling is *currently* needed. See, NRC Staff Proposed Findings, ¶ 70. However, the testimony from the Staff supports the possible need for additional biota sampling if during the alternate schedule other DU transport pathways indicate the transport of DU outside of the DU impact area, and the FSP plans for such additional sampling. McLaughlin Testimony at 11, Staff Exh. 1. Additionally, the Army's proposed finding should be rejected because it exceeds the scope of the alternate schedule request where it addresses the potential need for biota sampling during decommissioning activities after the alternate schedule.

The evidence cited by the Army to support its proposed findings in paragraphs 70. through 72, supports the proposed findings, however, the citations to the evidence from the Army appear to be off by one page. Additionally, paragraphs 68.j. and 68.k. should be attributed to Mr. Peckenpaugh's testimony rather than Mr. Snyder. See *generally*, Army Proposed

Findings ¶¶ 68 through 69.

VIII. CONCLUSION

For the reasons discussed above, most of STV's proposed findings of fact and conclusions of law are not supported by any legal or factual basis in the evidentiary record and should be denied.

For the reasons discussed above, some of the Army's proposed findings of fact and conclusions of law should be modified as necessary to follow the proposed findings of fact and conclusions of law proposed by the Staff.

Respectfully submitted,

/RA/

David Roth
James Biggins
Counsel for NRC Staff

David E. Roth
Mail Stop O-15D21
U.S. Nuclear Regulatory Commission
Washington, DC 20555
der@nrc.gov
(301) 415-2749

Dated at Rockville, Maryland
This 19th day of December, 2007

Office of the Secretary *
Attn: Rulemaking and Adjudications Staff
U.S. Nuclear Regulatory Commission
Mail Stop: O-16 G4
Washington, D.C. 20555
E-mail: HEARINGDOCKET@nrc.gov

Michael A. Mullett, Esq.
Mullett & Associates, LLC
309 West Washington Street
Suite 233
Indianapolis, IN 46204-2721
E-mail: mmullett@mullettlaw.com

Frederick P. Kopp, Esq.
Counsel
U. S. Army Garrison - Rock Island Arsenal
Office of Counsel (AMSAS-GCR)
One Rock Island Arsenal Place
Rock Island, IL 61299-5000
E-Mail: frederick.kopp@us.army.mil

Margaret Parish*
Law Clerk
Atomic Safety and Licensing Board Panel
Nuclear Regulatory Commission
T-3 F23
Washington DC 20555
E-mail: map4@nrc.gov

Emily Krause*
Law Clerk
Atomic Safety and Licensing Board Panel
Nuclear Regulatory Commission
T-3 F23
Washington DC 20555
E-mail: eik1@nrc.gov

/RA/

David Roth
Counsel for the NRC Staff

Mail Stop O-15D21
U.S. Nuclear Regulatory Commission
Washington, DC 20555
der@nrc.gov
(301) 415-2749

Dated at Rockville, Maryland
This 19th day of December, 2007