

## **Draft Rulison Sampling and Analysis Plan Responses to CDPHE Comments**

The following provides Noble Energy Production, Inc., Williams Petroleum RMT, and EnCana Oil & Gas (USA), Inc. (“the Companies) responses to the Colorado Department of Public Health and the Environment (CDPHE) comments to the Companies Appendix A Radiological Incident Management Plan of the Draft Rulison Sampling and Analysis Plan (SAP). The comments were submitted on December 18, 2007. Responses to the comments outlined below will be incorporated into a revised SAP.

**Comment 1:** CDPHE considers complete emergency response plans to be those containing three major components: mitigation, response and recovery. The incident management plan included in the Rulison Sampling Analysis Plan does not, and should, include adequate information on all three of these components. As such, the Incident Management plan in this document should be restructured to be consistent with standard community and industry incident response planning. The comments that follow are provided based on these three necessary components mentioned above.

**Response 1:** **The Radiological Incident Management Plan (RIMP) in the revised SAP will be restructured to include mitigation, response, and recovery components. As a point of information, it is important to note that the proposed gas drilling activities are not located within an area of known radiological contamination from the Rulison test. In fact, testing on gas wells drilled in the area since 1997, including analyses from Noble’s wells in 2005, 2006, and 2007, has not revealed any evidence of Rulison-related radiological contaminants in the natural gas or produced water derived from these wells. The most likely Rulison-related radiological contaminant that might conceivably be encountered during drilling is tritium, a very low energy beta emitter, which could occur in either natural gas or formation water. The RIMP presented in the draft SAP was developed so that in the unlikely event that Rulison-related radiological contamination was encountered during drilling, procedures are in place to recognize and handle the likely incidents that could conceivably involve radiological contamination.**

### Incident Mitigation

Mitigation addresses potential natural and man-made incidents that can occur. The mitigation component of an incident management plan should address the steps taken to minimize (or mitigate) the opportunities for risks from such incidents. The current document provides no statement of awareness or steps of mitigation for the types of natural or man-made incidents (with the exception of a ‘blow-out’ incident) for the project site. The recommendations below address this initial component of the project’s Incident Management Plan.

**Comment 2:** Provide a brief statement on the natural disasters/events that may occur in this area of the state. Focus on flash flooding, high winds, electrical storms and

winter storms (including melting run-off and temperature issues) that may impact disruption of equipment. The plan should propose steps to mitigate the potential for both environmental and human exposure during naturally occurring incidents. This may include minimizing contaminated material blowing into the river and run-off of surface contamination (the operational run-off released from drilling fluids and cuttings noted in section 2.3.2, page A-4 can be expanded upon for these incidents).

**Response 2:** **Natural disasters and events are not likely to affect the natural gas drilling operations so that an uncontrolled radiological release occurs. The potential source of Rulison-related radiation is located at a depth of approximately 8,500 feet below ground and is not known to be present in the proposed drilling areas. Standard drilling operations maintain sufficient head in the borehole using drilling muds and fluids so an uncontrolled radiological release is not expected, unless well control is lost (i.e., a blowout occurs). Real-time radiation monitoring will be conducted so that radiation in drilling fluids will be immediately detected and appropriate responses taken. Otherwise, radiologically-contaminated materials will not be stored at the surface that could be affected by natural events. It is also unlikely natural climate-related events can cause loss of well control. However, a brief summary of the likely natural climate-related events for the Rulison area will be included in the revised SAP. If these events have the potential to cause an uncontrolled radiological release, mitigation steps will be provided.**

**Comment 3:** Provide a brief statement on the potential man-made incidents beyond the ‘blow-out’ situation already referenced in the plan. Consider vehicles backing into equipment, structural collapse and explosions. Provide proposed mitigation steps for these types of man-made disasters. This may simply be marking traffic control areas and stating that standard industry precautions will be followed for checking structures and material storage.

Note: The procedures outlined for a ‘blow-out’ incident are response actions and should be placed under the Response Section of this Incident Management Plan.

**Response 3:** **A brief statement will be provided in the revised SAP that discusses likely man-made incidents, other than those already specified in the draft SAP, that could cause a radiological release. Proposed mitigation steps will be provided for the likely incidents identified.**

**The procedures outlined for a blowout will be moved to the incident response section of the revised SAP.**

**Comment 4:** Provide an outline of a communication plan for community responders that complements the safety briefing for personnel (Section 2.1, page A-1). This

community briefing should occur at least once per year and should include fire departments, law enforcement, emergency medical services (EMS) and hospitals identified to respond to incidents related to the site.

**Response 4:** **A radiological safety briefing packet will be prepared that can be shared with community responders. The community responders briefing will be presented annually to the appropriate local agencies.**

Comment 5: Clarification is needed as to whether the safety briefing occurring ‘prior to the start of field activity’ (Section 2.1, page A-1) is a daily event or some other frequency.

**Response 5:** **The radiological safety briefing specified in the draft Radiological Incident Management Plan occurs once prior to initiating drilling operations at each well. Since drilling and casing of a well to takes about a month, no additional radiological safety briefing for the crew is anticipated. Radiological safety reminders will be presented at daily shift change meetings.**

Comment 6: Clarification should also occur as to whether the safety briefing contains information for addressing what personnel are to do for potential exposure. If this briefing does not include the steps personnel are to take if exposed, add the personnel response expectations (or reference a document that already has this information in it) and provide the information to personnel on a routine basis, identifying a frequency pattern for such training. It is critical this material include information addressing personnel informing first responders arriving on the scene of the contamination status of injured individuals to reduce further exposures (to fire, law and EMS personnel).

**Response 6:** **The safety briefing will include information for site personnel in the event of radiation exposure. This information will include steps to be taken by personnel to determine if they have been exposed during a radiological incident. As discussed in Response 4, the radiation safety briefing will take place prior to drilling each well.**

Comment 7: Consistent with comment 13 (page 5) of Attachment 1 in the ‘Response to Comments’ document, ensure equipment measuring levels of potential contamination are appropriately calibrated. A mitigation plan should include a safety assessment of equipment for damage that may impact calibration or proper operation of equipment. This should also address weather issues for storage of equipment to ensure damage checks occur.

**Response 7:** **Per industry standards, at least two of each hand-held radiation survey instruments specified for the project will be maintained on site or be locally available. The instrument performance tests and records will be**

**proceduralized. The instruments will be calibrated in accordance with the manufacturers instrument operating and calibration procedures. Each instruments' background and source checks will be performed daily and a record of these checks maintained in an instrument log book. Control charts will be maintained to document the instruments performance over time and assess the need for calibration outside of the annual calibration required under 6 CCR 1007-1, Part 4.17.2.**

### Incident Response

The response component of an incident management plan should directly address the specific response actions for potential incidents. It is typical to create a base plan whereby a set of standard action steps will occur for any incident. The Incident Management Plan for this project currently provides an outline of steps for situations indicative of a release (section 2.3, page A-2). These steps can serve as the base plan for this project. Recommendations for additions to this base plan are as follows:

Comment 8: Confirm positive readings by one of the following methods: using back-up equipment, verifying proper use of equipment, confirming calibration of equipment.

**Response 8: As mentioned in Response 7, all on-site radiological survey instruments are calibrated in accordance with manufacturers specifications and checked daily to ensure that they are performing as designed. In addition, at least two of each hand-held radiological instrument will be maintained on site or be locally available in the event of equipment malfunction. The draft SAP will be revised to include a discussion of how to confirm a positive reading.**

Comment 9: Clearly state that activity will stop when the alarm is sounded and not resume until it is confirmed safe (currently that plan simply states an alarm will sound).

**Response 9: The draft SAP will be revised to indicate that all activity will be stopped when the alarm is sounded and work will not resume until it is confirmed safe.**

Comment 10: Notify community first responders and hospitals if medical care or other emergency support is occurring; i.e. expand on bullet three of Section 2.3, page A-2.

**Response 10: Bullet 3 will be revised to indicate that community first responders and hospitals will be notified if medical care or other emergency support is occurring or needed.**

Comment 11: Pre-prepare information for the community for notification following large incidents.

**Response 11: The radiological safety briefing package developed in response to Comment 4 will include community notification information for a radiological incident.**

Comment 12: A timeline for the frequency of grab samples with confirmed releases should be added (related to Section 4, page 32) and the basis for determining the frequency.

**Response 12: Grab samples are not proposed as part of the Radiological Incident Management Plan. The drill cutting and fluid grab sample specified in Section 4 is to provide laboratory radiological analysis of these materials to confirm whether Rulison-related radionuclides are present or not. If a radiological incident occurs that releases drilling cuttings and fluids to the environment, they will be screened with hand-held radiological survey instruments during the response. Samples may be collected during the recovery period to verify that the cleanup was successful. However, it is difficult to develop a timeline for sampling during cleanup of an incident that has not occurred.**

Comment 13: No response was provided in the 'Response to Comment' document for comment 11 requesting information be added to the Rulison Sampling and Analysis Plan on monitoring personnel as a component of personnel safety. It is critical that a procedure be in place for assessing personnel for exposure and proper notification of emergency response and medical teams occur for injured personnel of incidents.

**Response 13: Individual personnel monitoring using dosimeters is not proposed as part of the routine radiation monitoring during drilling. Dosimeters will be placed in the work areas most commonly frequented by drilling personnel to measure ambient radiation dose during drilling. In the event of a radiological incident, site personnel that are contaminated with drilling media, which might occur during a well blowout, will be frisked with hand-held radiological survey instruments to assess whether they have been contaminated with radiological materials. If they are radiologically contaminated, and are not injured, they will be decontaminated in accordance with the procedure provided in the draft Radiological Incident Management Plan. Frisking results will facilitate notification of emergency response teams if personnel are radiologically contaminated.**

Once the base plan is narratively outlined in the Response section, this Incident Management Plan should have response summary sub-sections for any steps in addition to the base response to natural events and man-made events. The following items are recommended for these sub-sections:

Comment 14: If mitigation steps fail with natural disasters, add how quickly and what approach will be taken to inventory equipment and determine potential contamination of the environment. Include any additional safety steps for personnel.

**Response 14: The draft SAP will be revised to indicate the timing and approach to control and minimize radiological contamination of personnel or the environment should the natural event mitigation steps fail.**

Comment 15: If mitigation steps fail for man-made disasters, add similar steps for confirming personnel, addressing area contaminated and working with first responders on the scene. Include the mechanism for confirming the safety of first responders when they arrive on the scene.

**Response 15: The draft SAP will be revised to indicate the timing and approach to control and minimize radiological contamination of personnel or the environment should the man-made incident mitigation steps fail. Approaches to protecting the first responders on the scene will be listed.**

Comment 16: Address that communication steps of the company with the community (including hospitals) are in place and activated when life-saving activity may be underway at the scene during an incident. Recognize that for natural disasters, standard mechanisms for communication may be compromised.

**Response 16: In the event of a radiological emergency, the Companies intend to contact the Garfield County Sheriff and Emergency Management office and the local hospital immediately. Satellite and cell phones are the primary means of outside contact available at the drill site. Should these communication channels fail, a designated site representative will drive to sheriff's office to inform them of the emergency.**

Comment 17: Address that the company's communication plan includes controlling the media and the community access to the scene and quickly determining the perimeter with security to minimize additional injuries or exposure.

**Response 17: Access to the drilling sites is currently secured. Thus, inadvertent access to the sites is controlled. However, in the event of a radiological emergency, the Sheriff's office will be notified to prohibit media and community access to the affected site. The controlled area dimensions**

**will be specified so that radiation exposures to the local community are kept as low as reasonably achievable.**

### Incident Recovery

The recovery component of an incident management plan addresses the clean-up steps following an incident. This section can be very short but should not be eliminated.

Comment 18: Provide a brief statement addressing clean-up after an incident. Reference existing company policies or comment that guidance will be obtained from the State.

**Response 18: A brief description will be developed to describe radiological incident recovery measures. Both company procedures and federal, state, and local guidance will be followed in the event of a radiological incident or emergency.**

Comment 19: A plan should exist for communicating with the public during this period and the frequency of such communication.

**Response 19: Communication procedures will be defined in the revised SAP. Company, federal, state, and local agency personnel will communicate with the public through the appropriate channels during the radiological incident and recovery, as necessary, to protect public health.**

Comment 20: Routine briefings with local responders, including the hospitals, are encouraged until confirmation that no additional opportunities exist related to the incident for the purpose of minimizing exposure.

**Response 20: The draft SAP will be revised to indicate that routine briefings will be conducted with local responders, including the hospitals, until it is confirmed that no exposure hazards remain.**