

Draft Protocol



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Aliso Canyon RCA SS-25 Site Evidence Collection and Documentation Protocol

Prepared For:

RCA SS-25:

CPUC, DOGGR, SoCalGas

Purpose:

To describe procedures for documentation and evidence collection at the Aliso Canyon SS-25 site post cementing and after confirmation that the well is sealed.

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1 Introduction

The purpose of this document is to provide a set of procedures for the collection and documentation of evidence at the Aliso Canyon SS-25 incident site by the Blade Team and those parties under Blade direction. The person in charge (PIC) of these activities on-site is the Blade Team Lead, Dr. Ravi Krishnamurthy. This is the first step after successful killing and sealing the well with cement, but prior to any reclamation and other work on-site to make the location rig ready. This data collection is prior to any work on the wellsite. These protocols and procedures are subject to change as additional information from the site and other data becomes available. A review of the plan will be done informally on a daily basis. In addition, unique circumstances may arise at the well site and Blade reserves the right to deviate from these procedures and protocols as unique situations arise in the field. Any deviation from these procedures and protocols shall be documented by the Blade team, and the appropriate entities including CPUC, DOGGR and SCG will be notified, and approvals will be obtained in advance of the affected activity. Blade, CPUC, DOGGR and SoCalGas personnel will be present during all activities of Phase 1. Blade will make all entities aware of the planned activities, and it will be the responsibility of the entities to be present at the site. If the entities are unable to agree on any activities described for Phase 1, CPUC will act as the arbiter, and make the final decision.

The following is the approximate order of the steps described in the document,

1. Setup site location references or grid as appropriate
2. Photo document the site and surrounding areas using still and video equipment
3. Well site evidence collection
4. 3-D survey of the crater
5. Wireline logging runs
6. Crater evidence collection, including fluid samples and casing examination
7. Wellhead cleaning
8. Wellhead and casing visual inspection, non-destructive examination and documentation

The activities for each day of Phase 1 will be discussed prior to initiation that day; all entities will have an opportunity to provide input and influence the activities.

1.1 Safety Concerns

The SS-25 site consists of a large and deep crater around the wellhead as shown in Figure 1. The depth of the crater is approximately 25 feet at the wellhead and the sides of the crater are steep and may be unstable. Extreme care must be exercised when working near, around and in the upper part of the crater. The stability and any geotechnical concerns regarding the crater will be addressed as part of the SCG safety

procedures. A geotechnical investigation and assessment to address geotechnical concerns will be performed prior to any access to the crater fluids and wellhead.

Discussions were held with all involved parties (SoCal, Fugro, Blade, CPUC, DOGGR) and it was concluded that a geotechnical assessment is not required as long as it is not necessary for personnel to walk on the bottom of the crater. There are no plans for personnel to walk in the crater or be in the lower part of the crater. A summary of the discussions is included in the Appendix, 9.6. All activities involving work at the SS-25 site including the upper part of the crater will be conducted in full compliance to SCG safety procedures for working in hazardous areas, such as safety harness for working at heights, confined space entry, checking for hazardous gases, proper PPE etc. Safety procedures defined by SCG will be followed during data and evidence gathering and may restrict certain activities such as physical access to the crater, perimeter access and sampling of the crater walls or large scale pumping of the crater fluid. Activities involving loads on the bridge exceeding 2,000 pounds may require further geotechnical evaluation. Any additional safety requirements will be documented and adhered to during all the activities described in this protocol.

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Figure 1: Crater around the wellhead

2 General Site Documentation

This section provides protocols and procedures for general site documentation. The procedures for all visual evidence collection and storage are included in Section 6 of this document.

2.1 Site Survey

Upon arrival, markers may be set up around the SS-25 wellsite and surrounding area(s) to identify unique points of interest for the Blade Energy RCA (Root Cause Analysis) team and/or to notate geographic direction for reference in photographic and video documentation. These markers are not to be altered by anyone other than members of the Blade team throughout the entirety of the investigation, unless otherwise directed or approved by the Blade team lead.

The location and nearby area will be surveyed to document existing conditions mapping of the well site. The work plan for surveying services by Cannon is included in the Appendix.

2.2 Photo Documentation

Using appropriate camera equipment, to be determined on site by the Blade team, the entire SS-25 wellsite and surrounding area(s) will be photographed and/or recorded, including but not limited to:

1. Geographic location, i.e. wellsite “knoll”, “knoll” hillside, cement drain ditch(s) and, surrounding geography
2. Entrance to SS-25 wellsite
3. SS-25 wellsite and surrounding area:
 - Crater
 - Wellhead and any temporary clamps/enclosures
 - Any temporary piping
 - Bridge
 - Gas “Vent(s)”
 - Mud/Fluid surrounding wellhead
4. SS-25A wellsite and surrounding area
 - Wellhead
 - Protective Structure

- Mud/Fluid
- 5. SS-25B wellsite and surrounding area
 - Wellhead
 - Protective Structure
 - Mud/Fluid
- 6. Debris
 - Any and all debris deemed to be important to Blade's investigation, including but not limited to:
 - a. Metal pieces
 - b. Concrete debris
 - c. Broken valves, casing, nipples, etc.
 - d. Solids found in surrounding soil/dirt or within crater

2.2.1 Video Documentation

Along with the documentation protocols included in Section 3 of this document, parts of daily activity will be recorded. Further, if deemed necessary, two to three video cameras will be set up on-site (exact locations to be determined) that will record the activities of data collection.

The video recordings will include audio recording with narration of the subject being video recorded.

3 Wellhead and Crater Documentation

3.1 Detail Visual Documentation

3.1.1 Area immediately surrounding wellhead

The area surrounding the well within a given perimeter, as defined by the Blade team on-site, will be photo documented with images cross-referenced to a physical map of the immediate area. A redundant location measurement will be made with respect to photos that depict highly-important items such as, but not limited to, metal or cement fragments. All physical measurements will be documented on the Blade Physical Measurements document shown in the Appendix, 9.5.

3.1.2 Grating / Walkway on the bridge

There is a grating on the bridge that facilitates walking on either side of the bridge. Following detail documentation of the grating; any evidence on the grating will be collected and documented per procedures described in Section 7 of this document. The grating on both sides of the bridge will be removed. The region below the grating will undergo photo documentation.

3.1.3 Crater

Photographic documentation of the crater will be taken starting with far-field images working inward to increase detail while preserving a logical progression. When possible, a length scale and directionality marker will be included in the image. Notes will be taken on the general characteristics of the crater such as location with respect to the wellhead, implied flow directions, flow source, rock type, hydrocarbon deposits, debris, etc. Notes will be cross-referenced to a specific image or series of images.

3.1.4 Wellhead

Photographic documentation of the wellhead will be taken starting with far-field images working inward to increase detail while preserving a logical progression. When possible, a length scale and directionality marker will be included in the image. Notes will be taken on the general characteristics of the wellhead including any visual damage, hydrocarbon deposits, debris, etc. Notes will be cross-referenced to a specific image or series of images.

3.2 Pre-Cleaning Physical Measurements

All measurements obtained will be recorded and reported to the accuracy of the instrument used.

3.2.1 Wellhead

Detailed dimensions of the wellhead and all associated equipment nearby equipment identified as relevant (offtakes, valves, etc.) will be obtained. Rough measurements will

be taken prior to cleaning. The appropriate measurement device will be chosen by Blade personnel on-site. This may include non-contact measurements.

3.2.2 Crater

A 3D survey will be performed by a contracted survey company. The survey will use high definition laser survey scanning equipment to create a 3-dimensional point cloud of the crater, bridge, and wellhead. The survey will need access to the perimeter of the crater to collect data from multiple locations. This survey will be able to map the crater geometry (and fluid within) without requiring physical access to the crater. The resulting 3D point cloud will allow of post-processing to estimate measurements (depths, contour plots, volumes, etc.). The scan shall include at least 3 known points located adjacent to the crater that will be identified on-site by Blade.

Directionality with respect to the geographical North and location with respect to the wellhead will be recorded.

The location and nearby area will be surveyed to document existing conditions mapping of the well site. The work plan for surveying services by Cannon is included in the Appendix.

3.3 Sample Collection

All collected samples will be handled as per Sections 6 and 7 of this document.

3.3.1 Soil from surrounding area and crater sidewall

Soil samples will be obtained at random or at specific locations as determined by Blade personnel on-site. All collected samples will be handled as per Section 7.

3.3.2 Metal debris

Locate and recover any metallic evidence from the SS-25 site area and the crater. For example, the 'B' annulus valve and line that is no longer attached to the wellhead. Use magnets and other suitable devices to locate and collect such evidence. Oily soil from the crater will be assessed for any indications of metal debris, in particular steel samples. All collected samples will be handled per Section 6 and 7.

3.3.3 Fluids from crater

Fluid samples will be taken from the crater before it is evacuated (i.e. pumped out). The first attempt to collect the samples will be made by lowering a containment vessel from the bridge into the hydrocarbon/mud/water pool within the craters. If this is unsuccessful, an alternate method will be devised by Blade personnel on-site. The depth of the fluid pool in the crater will be estimated using an appropriate measuring device. Samples will be taken from the surface, mid-level and the bottom of the fluid pool.

3.3.4 Deposits on wellhead/bridge

Any deposits or evidence identified on the bridge or wellhead will be collected as deemed necessary by Blade personnel on-site.

3.4 Wireline Logging

After the crater has been surveyed and after sample collection, but prior to wellhead cleaning, wireline logging runs will be conducted through the tubing. The proposed log runs in the order run follow:

1. Baker tubing caliper log - 24 finger mechanical caliper imaging log which will measure the internal diameter of the 2-7/8" tubing
2. Versa Line Spectral Noise Log (SNL)-A high sensitivity noise and temperature log to identify any lateral or cross flow across formations.
3. Versa Line MID2 log - multi-barrier casing inspection log using time domain magnetic defectoscopy. The tool can detect corrosion on the 2 7/8", and semi-quantitatively assess the integrity of the 7" outer casing string. By assessing the condition of the (7") casing string, the post-leak condition can be estimated in the event the 7" casing is damaged during the extraction of the 2-7/8" tubing.
4. Versa Line MID3 log - multi-barrier casing inspection log using time domain magnetic defectoscopy. The tool can detect corrosion on the 2 7/8", and semi-quantitatively assess the integrity of the 7" and 11-3/4" outer casing strings. By assessing the condition of the second (7") and third (11-3/4") outer strings, their post-leak condition can be estimated in the event they are damaged during the extraction of the 2-7/8" tubing.
5. Baker Micro Verti-log - magnetic flux leakage tool that will detect corrosion and mechanical defects on the internal diameter and outer diameter of the 2-7/8" tubing.

Calibration processes and procedures will be documented. If possible, calibration processes will be witnessed. Calibration data for all the tools will be documented. The procedure and/or relevant data regarding the impact of transportation on the tool calibration will be documented. The intent of the calibration is to ensure the tool performs within its stated performance limits.

The need for repeat runs will be assessed in consultation with all parties including the logging contractor, CPUC, DOGGR, SoCalGas and Blade.

3.5 Wellhead Cleaning

Wellhead cleaning will be conducted per Section 4 of this document. This requires coordination with environmental cleanup companies. Further, this operation will require a suitable work cage operated using a crane or scaffolding to provide a safe work platform

to clean the wellhead using pressure washing or solvents, while complying with all SCG safety requirements.

3.6 Crater Evacuation

Evacuation of the crater will be completed by use of a suitable pump or other means to remove fluids from the crater. This plan will be finalized based on safety and site review by SoCalGas, Blade, CPUC, DOGGR, and all other relevant parties. The truck or the tank used to collect the fluids will be inspected prior to usage. The evacuated fluids and solids will be passed through screen filters such as a shale shaker or other screening mechanisms to separate items of interest. Items collected are subject to Sections 6 and 7 of this document. The plan is subject to refinement based on on-site data and observations.

3.7 Post-Cleaning Visual Documentation

This will require a suitable work cage operated using a crane or scaffolding to provide a safe work platform to inspect and document the wellhead. All images obtained will be stored as per Section 6 Visual Evidence Collection and Storage Procedures.

3.7.1 Crater

Close-up and macroscopic documentation of the crater will be obtained. This will include items previously obscured by residual fluid in the crater. LIDAR and/or other 3-D characterization of the crater will be part of the crater characterization.

3.7.2 Wellhead

Close-up and macroscopic documentation of the wellhead will be obtained. This will include areas or items of interest (i.e. cracks, defects, surface damages, missing parts, etc.) previously obscured by residual fluid or deposits on the wellhead or within the crater.

3.8 Post-Cleaning Physical Measurements

The safety procedures for this work will be developed and agreed to prior to starting the work.

3.8.1 Wellhead and Exposed Casing

Dimensional measurements will be made of the cleaned wellhead and exposed casing at various locations. The extent of damage and deformation will determine the type of measurement device that would be used here.

3.8.2 Crater

Depth of the crater will be measured directly with respect to the surface or with respect to a local fixture (i.e. wellhead components).

3.8.3 Any defect characterization

All visible defects immediately at the wellhead/tree and casing will be documented with respect to size and location. On-site length measurements will be made visually by photographing the defect with a ruler placed nearby and/or by physical measurement.

3.9 Post-Cleaning Sample Collection

All collected samples will be handled as per Sections 6 and 7 of this document.

3.9.1 Previously inaccessible items

A careful repeat sweep of the area will be made after the crater is pumped out.

3.10 Non-Destructive Evaluation

Blade has identified a third party specializing in non-destructive inspection. The NDE capability will be available should it be determined by the Blade team that NDE of the wellhead is necessary. The methodologies are being developed. This assumes that the wellhead is accessible. Blade will define multiple approaches, but will identify the best strategy following wellhead cleaning. This may include, but will not be limited to:

1. MPI (Magnetic Particle Inspection)
2. UT (Ultrasonic Inspection)
3. LPI (Liquid Dye Penetrant)

4 Wellhead Cleaning Procedure

Wellhead cleaning will start with removing any thick-caked on solids using soft metal, such as brass or plastic scrapers. Samples of solids may be collected and labeled as evidence as directed by Blade representatives.

Pressure washing, the use of chemical solvents and other backup methods will be available for the wellhead cleaning procedure. Backup methods that need to be available include glass bead blasting and sand blasting. All environmental issues and safety issues will be discussed and agreed to prior to starting the cleaning operation. SoCalGas has identified Argus as the suitable contractor to conduct the wellhead cleaning. The details of the work plan are included in the Appendix.

4.1 Pressure Washing

The pressure and additives to the cleaning bath will be evaluated on pieces of scrap metal of the same hardness and composition of the wellhead prior to actual cleaning. This will ensure that no damage to the wellhead material will result from the water pressure wash procedure.

4.2 Solvents/Chemicals

An alternative (or complimentary) cleaning method is the use of solvents/chemicals. The solvents/chemicals and the procedure proposed will be reviewed to ensure that no threat is posed in altering evidence such as fractographic surfaces. The clean-up of the site will be discussed prior to application with the third party vendor and SCG safety team.

4.3 Blasting

Glass bead blasting (first choice) or sand blasting services will be available in case the pressure washing and chemical methods are not adequate to clean the wellhead.

4.4 Wellhead Cleaning Requirements

The wellhead areas where NDE may be necessary needs to be cleaned to bare metal. All wellbore solids, wellbore fluids and paint need to be removed without damage to the base metal.

5 Debris Collection Procedure

As reported by the STANDARD SESNON 25 Chronology Summary, a blowout vent opened 20' from the wellbore and began shooting debris 75' into the air. The Aliso Canyon incident site has the potential for containing metallic and non-metallic debris in the area surrounding the wellhead. The debris could contain critical information pertaining to the incident. All potential evidence pertaining to the incident shall be identified and collected by the Blade team prior to disruption of the site. The following procedure describes the steps required to properly search, identify, and collect any debris potentially associated with the incident.

The initial approach to debris collection will be based on visual identification of any and all form of relevant debris. Following this initial approach, metal detection tools will be utilized. SoCalGas has identified AECOM to provide metal detection data. The geophysical survey will be performed utilizing a Geonics EM61-MK2 metal detector paired with an RTK or VRS capable GPS system capable of outputting NMEA data (GPS provided by SoCalGas). The work plan for the Geophysical Investigation is included in the Appendix, 9.8. In summary, the survey data will be collected using a third party two person team. The area will be surveyed using metal detectors with parallel survey lines spaced (two) 2' apart to ensure the entire area is surveyed. The results from the survey data will be utilized to further identify remaining debris.

The debris located with be evaluated to determine if the debris is to be deemed "Evidence" by Blade. Evidence means the sample could be related to the well failure and will be documented and collected according to the procedure in Section 7.

Samples/debris that are clearly not related to the well failure or kill attempts will be identified as "Legacy/Kill Attempt Related". Legacy samples/debris will be photographed without detailed documentation. The samples will be collected and stored. Examples of Legacy samples include surface equipment, welding rods, bits of wire, rods, etc. It is typical to find these types of items on old wellsites. The Legacy samples are not considered relevant to the ongoing RCA.

Any piece of debris of interest that is found where the relevance is uncertain shall be collected and documented as evidence by the Blade team.

The following steps will serve as a guide for the debris search. If and when questions arise, Blade will recommend a course of action in consultation with CPUC, DOGGR and SoCalGas.

1. A pre-search procedure and safety meeting will be conducted prior to entering the site. The meeting will discuss the detailed procedures and protocol for the search as well as safety related to the site.

2. The team will contain at least one Blade representative responsible for coordinating the search and collecting the debris.
3. Any debris identified during the search will not be disturbed or touched until proper documentation is completed by the Blade team.
4. Proper documentation of any evidence will follow the steps described in Sections 6 and 7 describing procedures for visual and physical evidence collection and storage.
5. Documentation and collection of the debris will be conducted by Blade personnel and/or other investigation teams including CPUC, DOGGR and SoCalGas and its contractors. Once identified Blade personnel will complete documentation and logging of the evidence.
6. A marker (flag, stake, etc.) shall be placed to indicate the location of the found debris prior to being properly documented and collected by the responsible Blade team member.
7. The search will continue until all identified debris has been collected.
8. When required, special procedures will be developed for inaccessible areas of the site based on unique requirements (such as crater and wellhead). These procedures shall be documented by the Blade team.

These procedures serve as a general guideline for the debris search and may be changed as additional information becomes available.

5.1 Visual Search for Evidence Plan

The visual search is designed to identify any and all possible evidence to be collected by Blade. Five (5) search zones have been identified as shown in Figure 2. The purpose of search zones is to break up the site into areas that require different search methods and for evidence location reference. The outer black circle in Figure 2 indicates a 400ft radius from the SS-25 wellhead. Blade will search all accessible areas of the site within the 400ft radius. Blade may choose to extend the search boundary based on information collected during the search. The 5 search zones are:

Zone 1 – Original inner boundary identified during the original search. This is a critical zone that will require a detailed and controlled search pattern. This zone includes the crater, bridge, SS-25, 25A, and 25B wellheads, and all associated piping.

Zone 2 – Relatively flat/shallow slope regions that are easily accessible by Blade personnel.

Zone 3 – Steep slope requiring ropes and harnesses for access.

Zone 4 – Steep slope requiring ropes and harnesses for access.

No Go – These areas have severely steep slopes and are not accessible by Blade personnel.

Zones 1-4 will be searched by Blade. Areas identified as a No Go (Zone 5) will not be visually searched. Zone 1 will be sub divided into 10' x 10' squares. The grid will be approximately 110' x 130'. The actual grid will be determined on-site. The grid has letters A-K labeled from South to North indicating rows. Columns are number from 1-13 from West to East. Figure 3 shows the approximate location for the grid. Figure 4 shows the approximate location of the origin for the Zone 1 grid. Zone 1 will be highly controlled after grid layout.

All parties entering and exiting the zone will be documented. Grid areas will be cleared once all evidence within a particular grid area (e.g. A1, A2, etc.) has been identified, documented, and collected. A grid area is considered open to the public once it has been cleared by Blade. The visual search will be followed by a metal detection search by AECOM.

Zone 2 contains areas that are flat or have shallow slopes. This zone is easily accessible by Blade and will not require special equipment to search. The search paths are straight lines spaced at lengths based on the number of Blade personnel involved in the search. Zones 2 and 3 have been identified as having a steep slope. These zones will require rope harnesses. Since Blade personnel will be anchored to a single point, these zones will be searched using sweeping arcs at varying radii. Search paths for each zone are shown in Figure 2.

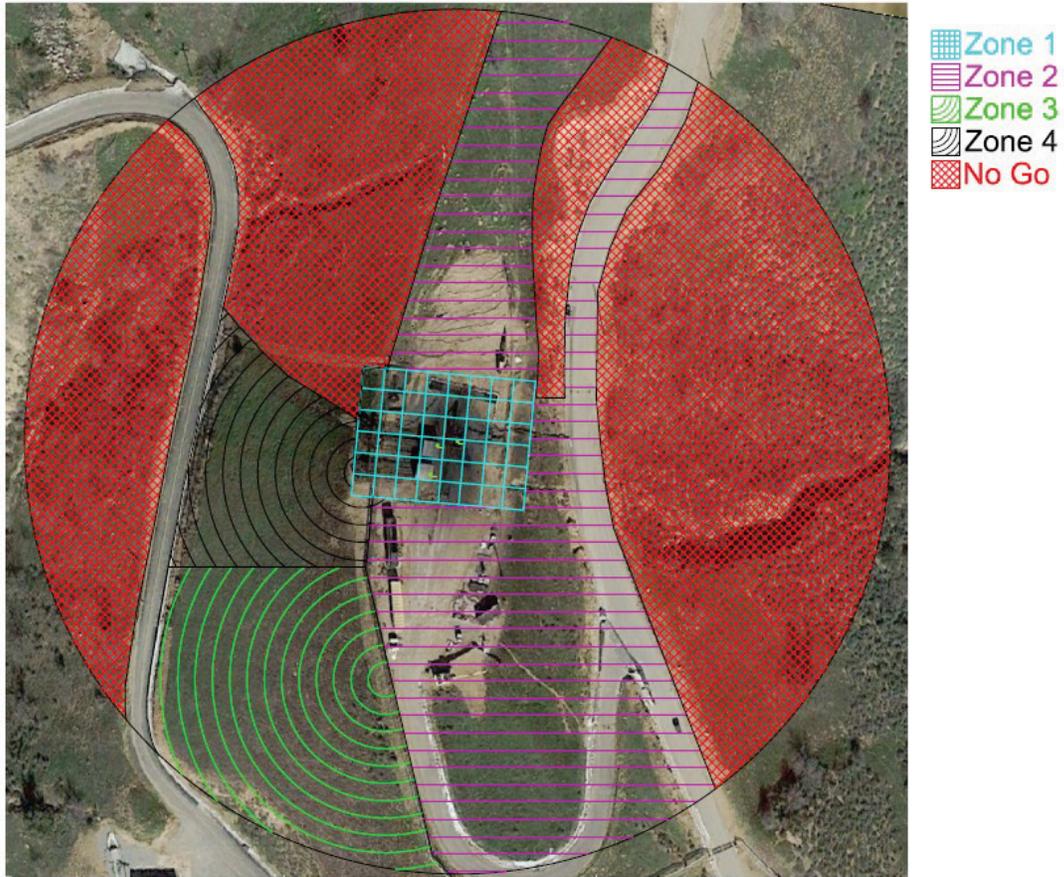


Figure 2: Visual search zones



Figure 3: Zone 1 search grid



Figure 4: Zone 1 grid origin

6 Visual Evidence Collection and Storage Procedures

Visual evidence of the site includes photographic and video evidence. Photos and videos taken of the site and physical evidence serve as an excellent source of information during the investigation. Lab quality photographs of physical evidence may be taken. Visual documentation will be performed on the overall site, individual components of the well, all collected samples, and as required for sufficient documentation. The following procedures will serve as a guideline for visual documentation and represent the minimum requirements. Additional requirements may become necessary as unique situations arise.

1. Photographic and video evidence will be taken prior to disturbance of the site or any physical evidence. Additional visual documentation will occur after disturbance of any evidence by personnel or site operations.
2. For evidence that will be removed, label and photograph the evidence. Prepare physical evidence per Section 7 Physical Evidence Collection and Storage Protocol.
3. Fully photograph all physical evidence before it is moved. Ensure that the position of the evidence within the context of the incident scene is recorded. Include markers or known objects to properly capture the location of the evidence.
4. Document the scene from a wide angle to a narrow angle to ensure the context of the scene is understood later. Perform a running narration when using the video camera.
5. Photograph physical evidence from multiple angles.
6. Place a ruler, scale, or other item with known dimensions near physical evidence to indicate size and distance. During photography, macro measurement of the failed parts and other pertinent components should be made.
7. Any physical measurements made in the field should be visually documented in a photo or video, if possible.
8. All photographs and videos shall be collected on a hard drive at the end of each day. The hard drive shall be cloned to a backup hard drive for security. This will be performed by the Blade team.
9. Visual evidence collected in the field will remain in Blade custody at all times during the investigation.

10. Requests for copies of visual evidence must go through Blade Energy Authorized personnel, namely, Ravi Krishnamurthy, Bill Whitney, or Randy Rudolf.

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7 Physical Evidence Collection and Storage Protocol

Physical evidence will be collected from the site. The physical evidence must be collected in a way that the condition of the evidence is not disturbed (or is minimally disturbed) and the conditions surrounding the evidence are entirely documented. When physical evidence is encountered, the following procedures will be followed. The following procedures give guidelines for collecting small or large, solid and liquid samples. All Phase 1 stored evidence will be kept in a secure location that is climate controlled.

Hazardous material such as hydrocarbons will be marked accordingly. Handling, transportation and storage of hazardous material will follow SCG and standard procedures for dealing with hazardous material.

Larger samples and equipment will be processed according to the Tubing/Casing/Wellhead Extraction protocol, which will be part of Phase 3, and is not addressed here. Further, Phase 2 is where site restoration and rig readiness will be addressed. Here only Phase I site evidence collection, documentation and storage is addressed.

1. Before disturbance, photograph the evidence using still and/or video cameras. Follow the procedures for collecting visual evidence described in Section 6.
2. Before collection, label and photograph evidence to be removed. Prepare and prioritize a list of the physical evidence to be gathered and/or analyzed. Collect any perishable evidence as soon as it can be accessed after arrival at the site.
3. A Blade team member shall affix a Blade evidence label to all evidence bags, bottles, jars, and other containers, with at least the following information:
 - a. Sample ID (refer to Section 7.2 for the evidence identification convention)
 - b. Brief description of the sample (size, color, shape, and other identifying properties, etc.)
 - c. Date and time of collection
 - d. Name of investigator
4. Following collection, the evidence will be transported to a secure location. All evidence from Phase I will be at the secure location.
5. Prior to removing evidence, for any analyses, from the secure location, notify and obtain approval from all other agencies and company officials of the schedule for its removal. Coordinate with these individuals to ensure that all issues will be resolved. The details of transport and preservation of evidence during transportation will be parts of another procedure and protocol. Only collection, documentation and storage at the secure location is discussed here.

7.1 Secure Location

The secure location consists of two (2) steel trailers with climate control at the SS-9 location. The containers have locked doors and Blade representatives have the keys to the doors.

Additional security includes the use of Blade numbered zip ties that will break if the trailer door is opened. Blade will keep a log of the numbered zip ties. A new zip tie will be installed and logged after each entry.

The secure location container serial numbers, and names for ease of communication, are shown in Table 1.

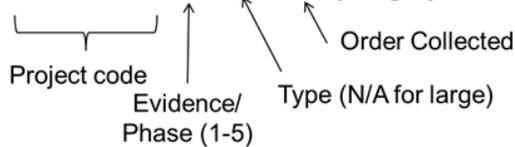
Table 1—Secure Location Container

	Container Serial Number	Container Name
Primary Secure Location	AS40GYW031	Valentine
Backup Secure Location	BS40UYW0016	Piper

7.2 Evidence Identification Convention

The following evidence identification naming and numbering convention will be used to document and label evidence collected:

- **AC-RCA-E1-S001 (soil)**
- **AC-RCA-E1-L001 (liquid)**
- **AC-RCA-E1-M001 (metal)**
- **AC-RCA-E1-X001 (other)**
- **AC-RCA-E1-0001 (large)**



For example, this protocol is for Phase 1 so the Project code and Evidence phase for all evidence collected will start with:

AC-RCA-E1- . . . followed by the Type and Sequence in the order collected 001, 002, . . . 00n.

7.3 Solid Samples

Samples of solids may be collected during the investigation. Solid samples range in size and composition. To accommodate various sample sizes, the following sub-sections

describe different techniques for labeling and collecting both small and large solid physical evidence.

7.3.1 Small

Small solid evidence is defined as solid evidence that can fit in a standard 9" x 12" mailer without damaging the packaging. Samples that fit this description shall be documented by a Blade team member using the following procedure.

1. Document the evidence as described at the beginning of the section.
2. After photo documentation with the proper labels, place the evidence in an evidence bag of the appropriate size.
3. Place the properly filled out Blade evidence label inside the evidence bag.
4. Ensure the information inscribed on the Blade evidence label is transferred to the bag for redundancy in the event the Blade evidence label is lost or damaged.
5. Place the evidence bag with the evidence inside a bubble mailer or similar container.
6. Fill out the Blade Evidence Data Sheet (Appendix, 9.1) and the Blade Chain of Custody form (Appendix 9.2).
7. The Evidence Data Sheet and COC form are to remain with the sample. Make an electronic copy of all paperwork. Place the paperwork with the evidence in the bubble mailer or other container.
8. Seal the container and log the sample in the appropriate Blade Evidence log, attached hereto in the Appendix 9.3.
9. Place the container with the evidence in a secure location. Appropriately protect the fracture surfaces and/or damaged areas. Evidence in the secure location is in Blade custody.
10. The placement of evidence in the secure location will be witnessed by a third party (non-Blade person).
11. Evidence will not be removed from the secure location without notifying Blade and following proper procedures.
12. Requests for physical evidence must go through Blade Energy Authorized personnel, namely, Ravi Krishnamurthy, Bill Whitney, or Randy Rudolf.

7.3.2 Large

Large samples shall be handled in a manner similar to small samples. The main difference is how the evidence paperwork is stored with the physical evidence.

1. Document the evidence as described at the beginning of the section.

2. Apply a Blade zip-tie containing a unique Blade ID. The zip-tie will serve as the label for the evidence. All information pertaining to the sample shall be recorded on the Blade Evidence Data sheet.
3. After photo documentation with the proper labels, protect the evidence by some means necessary to prevent damage or disturbance during storage and transportation.
4. Fill out the Blade Evidence Data Sheet and the Blade Chain of Custody form.
5. The Evidence Data Sheet and COC form are to remain with the sample. Make an electronic copy of all paperwork. Place the paperwork in a mailer or plastic bag and secure the paperwork to the sample by some means that does not damage or severely disturb the evidence.
6. Place evidence in a secure location. Appropriately protect the fracture surfaces and/or damaged areas. Evidence in the secure location is in Blade custody.
7. The placement of evidence in the secure location will be witnessed by a third party (non-Blade).
8. Evidence will not be removed from the secure location without notifying Blade and following proper procedures.
9. Requests for physical evidence must go through Blade Energy Authorized personnel, namely, Ravi Krishnamurthy, Bill Whitney, or Randy Rudolf.

7.4 Liquid Samples

Liquid samples may be collected at the site. Liquid samples may be collected in various containers such as jars, bottles, syringes, and other similar containers. Liquids that are collected in small containers may follow the procedures for small solids. The container may be placed in a bubble mailer or similar container rather than an evidence bag if necessary. For large samples, the jar, bottle, or other container will follow the procedures below.

1. Document the evidence as described at the beginning of the section.
2. Use a Blade evidence label on the outside of the container. Transfer the information from the label to the outside of the container for redundancy.
3. After photo documentation per Section 6 with the proper labels, place in an appropriate container for the liquid evidence.
4. Fill out the Blade Evidence Data Sheet and the Blade Chain of Custody form.
5. The Evidence Data Sheet and COC form are to remain with the sample. Make an electronic copy of all paperwork. Place the paperwork with the evidence in the bubble mailer or other container.

6. Place evidence in a secure location. Evidence in the secure location is in Blade custody.
7. The placement of evidence in the secure location will be witnessed by a third party (non-Blade)
8. Evidence will not be removed from the secure location without notifying Blade and following proper procedures.
9. Requests for physical evidence must go through Blade Energy Authorized personnel, namely, Ravi Krishnamurthy, Bill Whitney, or Randy Rudolf.

7.4.1 Liquid Samples Objective

Liquid samples of hydrocarbons may be collected for the purpose of determining the composition and biomarkers. Specific tests for this purpose will be conducted. The proposed number of samples is five (5) samples at each sample location. Each sample size is 125ml. This number of samples may be dictated by the volume of liquid available.

7.4.2 Liquid Sample Collection

Samples will be collected and put into sample jars using a suitable device to scoop of viscous liquid and to place the liquid in a jar. Take care to capture a uniform and representative sample in each of the 5 sample jars at each sample location. This protocol is based on standard laboratory practice.

Viscous liquids will be scraped from the tops of pools of liquids using a garden shovel. Between samples/locations, the tool will be cleaned with acetone and rinsed with distilled water and air dried.

Sample containers will be laboratory grade glass, 125ml capacity with Teflon sealed lids. Nothing will be added to the sample. Samples will be stored in a refrigerator in the evidence secure location.

7.4.3 Liquid Samples Locations

The proposed liquid samples locations are shown in Figure 3. Other sample location may be selected on-site. Actual sample locations will be part of the evidence documentation.

7.5 Environmentally Sensitive

Environmentally sensitive evidence includes solids and liquids that will degrade or change based on the environment they are exposed to. Examples of such samples are metals that corrode and soils that have microbes. Environmentally sensitive evidence requires unique handling to ensure the evidence remains the same as when it was collected. Procedures for these types of samples will be determined on-site and will be documented with the collected evidence with the SoCalGas Environmental team input. All evidence will be stored in a secure climate controlled environment.

8 Chain of Custody Procedure

Upon receipt of any physical evidence collected by the Blade Energy RCA team, the following Chain of Custody (COC) Procedure should be followed by any person handling said evidence.

1. Ensure the visual/physical evidence procedures and protocols in Sections 6 and 7 of this document have been followed.
2. Complete, in its entirety, the Blade Chain of Custody (COC) form, attached hereto in the Appendix, 9.2.
3. Upon completion of the COC, the sample will be placed in an appropriate container along with the associated COC and sealed, complete with a tamper-evident company seal or tag. The receiver will be instructed to complete the COC upon receipt of evidence, and a copy shall be sent to the Blade RCA team by the receiver.
4. Once the container has been sealed, relevant information shall be recorded in the Blade COC Log by a Blade team member, attached hereto in the Appendix 9.4.
5. The Blade COC Log will be stored with the Blade Energy RCA Team.
6. Transportation of evidence will be traceable and managed according to chosen carrier's procedures, all applicable laws, and regulatory agencies.

9 Appendices

Blade has several documents and forms created for logging and identifying evidence in the field. Samples of these documents are shown in the Appendices.

Also supplier work plans and documents are included in the Appendices for reference.

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9.1 Blade Evidence Data Sheet (Sample)

BLADE EVIDENCE DATA SHEET



<p>Sample ID: _____</p> <p>Collected By: _____</p> <p>Date Collected: _____</p> <p>Time Collected: _____</p> <p>GPS Coordinates:</p> <p style="margin-left: 40px;">Latitude: _____ Longitude: _____ WP: _____</p> <p>Physical Measurements:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 35%;">Measured From:</th> <th style="width: 35%;">Measured To:</th> <th style="width: 20%;">Distance (ft):</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Measured From:	Measured To:	Distance (ft):	1				2				3				<p>Photos Taken Y <input type="checkbox"/></p> <p>Video Taken: Y <input type="checkbox"/> N <input type="checkbox"/></p> <p>Has Label: Y <input type="checkbox"/></p> <p>Has COC: Y <input type="checkbox"/></p>
	Measured From:	Measured To:	Distance (ft):														
1																	
2																	
3																	
<p>Physical Description (<i>size, color, shape, etc.</i>):</p>																	
<p>Location/Site Description (<i>datum descriptions, surrounding conditions</i>):</p>																	
<p>Additional Notes:</p>																	

9.2 Blade Chain of Custody Form (Sample)



Chain of Custody Form

Sample Identification, including package type, sample ID #, and description of contents.

Provide signature, company, date/time, and quantity of sample(s) to document evidence of transfers. Discuss any changes and alterations to the sample in the comment section.

1. Relinquished By: <i>(Company Name)</i>	Date/Time/Qty/Loc	2. Received By: <i>(Company Name)</i>	Date/Time/Qty/Loc	Comment
Print Name: Signature: Pkg Tag/Seal No:		Print Name: Signature: Pkg Tag/Seal No:		If applicable, Does Tag/Seal No.* Match Shipper? (Y/N) _____. If No, explain (or notate any evidence of package tampering): Any changes to sample(s)? (Y/N) _____. If yes, explain:
3. Relinquished By:	Date/Time/Qty/Loc	4. Received By:	Date/Time/Qty/Loc	Comment
Print Name: Signature: Pkg Tag/Seal No:		Print Name: Signature: Pkg Tag/Seal No:		If applicable, Does Tag/Seal No.* Match Shipper? (Y/N) _____. If No, explain (or notate any evidence of package tampering): Any changes to sample(s)? (Y/N) _____. If yes, explain:
5. Relinquished By:	Date/Time/Qty/Loc	6. Received By:	Date/Time/Qty/Loc	Comment
Print Name: Signature: Tag/Seal No:		Print Name: Signature: Tag/Seal No:		If applicable, Does Tag/Seal No.* Match Shipper? (Y/N) _____. If No, explain (or notate any evidence of package tampering): Any changes to sample(s)? (Y/N) _____. If yes, explain:

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9.5 Blade Physical Measurements (Sample)

BLADE EVIDENCE PHYSICAL MEASUREMENTS



Project No: SCG-016-001 Performed By: _____ Date: _____

Measured From: (Mapped Benchmark Description)	Measured To: (Evidence # Being Collected)	Distance (ft)

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9.6 *Geotechnical Discussion*

The Fugro discussion Memo follows.

DRAFT



MEMORANDUM

To: Jill Tracy & Hilary Petrizzo (SoCalGas)
From: Thomas Blake & John Lohman
Date: 03/25/16
Ref: Fugro Project No. 04.62150117
Re: Well SS-25, Aliso Canyon Gas Storage Field, Northridge, California

SUMMARY OF GEOTECHNICAL DISCUSSION DURING CONFERENCE CALL ON WEDNESDAY, 3/23/16

1. Before personnel would be allowed to enter the crater as-is, and walk on the crater floor, at the Well SS-25 site for purposes of visual examination and evidence collection, a geotechnical study was requested to determine the stability of the crater walls. That study would consist of the following tasks (with their estimated times shown in parentheses):
 - a. Clear proposed drill locations for underground piping and structures (1 week).
 - b. Drill, sample, and log four (4) small-diameter (about 6-inch-diameter) borings to about 50- to 60-foot depths; performing acoustic televiwer surveys in each drill hole to measure bedding plane orientations (1 week).
 - c. Perform laboratory testing of samples collected from the borings (primarily direct shear testing) (3 weeks).
 - d. Using the shear test results we obtained from the site a couple of months ago along with the newly performed direct shear test results 2D limit-equilibrium slope stability analyses would be performed to evaluate the temporary stability of the crater walls. Because the crater is actually a three-dimensional shape, the 2D analyses would be expected to produce conservative results. The analysis would utilize Lidar data that we understand is being obtained to map the slope geometry (1 week).
 - e. If the 2D analyses demonstrate adequate temporary stability, then the next step would be to proceed to development of recommendations and report preparation. However, if the 2D results do not demonstrate adequate stability, then a 3D finite element analysis can be undertaken to evaluate the stability. The 3D analysis would be undertaken because the crater stability analysis is actually a 3D problem and performing a 3D finite element analysis should give results that are more representative of the actual conditions than would a simplified 2D analysis. (3 weeks).
 - f. If stability analyses (by either 2D or 3D methods) demonstrate adequate temporary stability, then recommendations would be developed for accessing the crater. If adequate stability cannot be demonstrated, then mitigation measures would need to be developed to improve temporary stability for the purposes of crater access (1 week).
 - g. A written report would be prepared to document the analysis and findings (1 week).
2. The geotechnical assessment of stability discussed above may be completely eliminated by making the assumption that the crater slopes do not have adequate stability. By making that assumption, we can proceed directly to the development and use of mitigation techniques that allow for safe personnel entry to the crater. Before the mitigations are applied, it would be best to perform all evidence collection work needed in the pad area, because the mitigation measures are expected to disturb the pad's ground surface. The following mitigation measures would allow for safe access to the wellhead:
 - a. Access to the area within 10 feet of the edge of the crater is currently restricted. If personnel need to access that area for evidence collection, they should be able to do so as long as they utilize a safety harness system and safety spotters.



MEMORANDUM

- b. Utilize an excavator to lay back the side slopes of the crater (thereby increasing the stability of those slopes so that safe personnel entry would be possible). As a variation on this mitigation, create a laid back slot through a portion of the slope southeast of the well and place steel shoring boxes in that slot. That would allow for safe personnel access to the well casing while leaving most of the crater walls undisturbed.
 - c. Suspend the inspection personnel from a crane in a personnel-basket. Keep the basket suspended a safe distance off the bottom of the crater, to allow space for slope-failure debris to accumulate safely below the basket, in the event that a slope failure occurs.
 - d. Construct scaffolding around the wellhead supported by the bridge structure (or supported on the bottom of the crater), again keeping personnel elevated a safe distance above the bottom of the crater.
 - e. Remote suction of fluids from within the crater can be performed for evidence collection, provided a safety harness and safety spotters are used within the 10-foot edge-of-crater restricted access area.
3. Another item that was also discussed was the issue of determining the supporting capability of the pad for a work-over rig that would be brought in to pull casing from the crater (Phase 2). A couple of options were discussed (see below). The recommendations for the options noted below could be developed without the need for drilling exploratory borings on the site, because the material properties needed could be developed from surface samples collected from nearby slope exposures on January 15, 2016. Once the bearing capacity of the materials used to fill in the crater is determined, the work-over rig loads could be spread out at the surface as needed to be consistent with the anticipated bearing capacities.
 - a. The crater could be filled in with a sand-cement slurry mix (poured from cement trucks) that could be designed to have a strength that mimics the strength of the intact rock materials that underlie the Well SS-25 pad. The wellhead would be covered with a protective material before filling in the crater with slurry mix.
 - b. Alternatively, the crater area could be partially overexcavated (to develop stepped benches) and compacted fill materials could then be placed in the excavation. The fill would be placed in layers and rolled with a sheepfoot roller to compact the materials. The wellhead would be covered with a protective material before filling in the crater with compacted fill materials.

If you have any questions please contact either Thomas Blake or Keith Askew.

9.7 Land Surveying Work Plan

The work plan for Cannon follows.

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SCOPE OF WORK



Cannon will perform professional land surveying services to acquire existing conditions mapping of the well site shown above in Aliso Canyon. We propose to employ conventional, GPS, 3D laser scanning and UAS survey methods to acquire the field data.

First, primary horizontal and vertical control points will be established via static GPS observations "Leica G15" GPS receivers. Second, secondary horizontal and vertical control will be developed to control the targets for the 3D laser scanner and the targets controlling the aerial imagery using "Leica 1203 R300" total stations. Third, 3D laser scans will be collected within the 1 acre± orange polygon shown above using the "FARO Focus 3D x330" scanner (range 330m; 1,000,000 points/sec; point density 4mm at 10m). SoCal may have at its discretion a representative on site while the field scanning is being performed to provide input to the Cannon field crew, and ensure that all the required features within said orange area are captured in the laser scans. *Note that the laser scanner is a "line of sight" device; objects obscured from view or otherwise unobservable by the scanner from a safe vibration free position will likely not be captured.*

The above terrestrial data will be complimented by aerial imagery collected over the 11.5 acre± blue circle (400' radius) shown above, via an Unmanned Aerial System (UAS), specifically "DJI Inspire 1, Model T600", supporting a "X3 FC350" camera system (94° FOV, 12 megapixel, 4K video). The aerial photography will be registered to the same control as the laser scanning. *Note that 3D laser scanning and photogrammetry produce terrain data by two entirely different technologies, which can potentially produce terrain models with minor differences.*

The data will be tied to a SoCal designated and/or NAD'83/NAVD'88 datum but will not necessarily have direct ties to property lines. The various field data will be processed and compiled into AutoCAD Civil 3D drawing format for your use, and will exhibit contours and 3D modeled renderings of the visible fixtures and improvements within the designated site, together with a geo-referenced aerial image.

SCHEDULE

We anticipate the field work will require two days maximum, the data download, processing, modeling and map compilation will likely consume 5-10 working days.

DELIVERABLES

- Fully registered 3D laser scan (FLS Format)
- Offset and orientation of vectors and scanned data of the area
- AutoCAD 2015 drawing file exhibiting contours and improvements
- Digital Terrain Model derived from 3D laser scan data
- Digital Terrain Model derived from aerial imagery
- Geo-referenced aerial image file

ASSUMPTIONS AND EXCLUSIONS

The following assumptions and exclusions apply to this proposal:

- Access to the site will be unrestricted during the work hours we have been given
- We expect the field work will require at least two days on site
- Our personnel will be able to collect the survey data unimpeded by other operations that may be taking place on site (our standby rate for the field crews is \$285/hr.)
- No boundary survey will be performed
- No property corners will be set
- No Record of Survey or Corner Record will be prepared

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9.8 Geophysical Investigation Work Plan

The work plan for AECOM follows.

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Geophysical Investigation Work Plan

March 23, 2016

Background:

Southern California Gas (SoCalGas) has developed the following Geophysical Investigation Protocol to identify surface and subsurface metallic objects at SS-25 (Site), located at the Aliso Canyon Storage facility at 12801 Tampa Avenue, Northridge, CA.

Geophysical Investigation:

The site map below shows the proposed investigation area at SS-25 enclosed in red. The geophysical survey will be performed utilizing a Geonics EM61-MK2 metal detector paired with an RTK or VRS capable GPS system capable of outputting NMEA data (GPS provided by SoCalGas). SoCalGas contractor (Contractor) and a Blade Energy Partners (Blade) Representative(s) will conduct the geophysical survey together, allowing the Blade representative to immediately excavate and investigate any object identified by the survey team. Contractor will use different color flags to identify a found object and delineate if the object was excavated and transferred to evidence storage. Concurrently, Contractor will document the description and disposition of the excavated object. To improve detection of small metallic objects, smaller wheels will be used to lower the nominal height of the EM61-MK2 sensor from the standard 16 inches to 10 inches.



Data Acquisition

Prior and subsequent to data collection, calibration of the equipment will be performed and documented utilizing a basic function check. This will consist of measuring the instrument response to an object with known response characteristics to verify the geophysical system is operating properly. Survey data will be collected using a two man team collecting parallel survey lines with a nominal spacing of 2 ft. Cones or an equivalent system that doesn't leave petroleum based residues will be used to mark line paths during the survey to ensure proper spacing. The survey work will be performed with the objective of detecting an 80 gram or larger metallic object at 3" depth.

Production rates are expected to be about 1.25 acres per day in flat areas, and 0.5-0.75 acres per day in steeper terrain. Survey limitations include:

- Steep slopes east of the pad will limit the survey to areas that can be safely mapped without risk to the field crew
- Vegetation and existing structures that block direct access by the survey team will not be surveyed
- Nearby concentrations of metal including pipelines and reinforced concrete will interfere with the identification of metallic objects smaller than the interference source (e.g. the existing 100' x 10' steel bridge)
- Any unstable ground or otherwise unsafe areas will not be mapped

In areas that cannot be mapped due to steep slopes or nearby concentrations of metal, a handheld metal detector will be used to identify subsurface metal. A nominal lane spacing of 4-5 feet will be utilized for the handheld survey. To access steep slopes east of the pad, a crane basket, manlift or equivalent will be used to safely access the slope. All identified (audible) responses will be marked using vinyl pin flags.

If space is available, geophysical equipment will be secured and stored on-site.

Data Processing

At the conclusion of data collection, data will be downloaded from the instrument and processed off-site. Data processing will include review of spikes and noisy data, latency/lag correction, removal of instrument drift using demedian or equivalent filtering, and identification/selection of anomalous responses indicative of subsurface metallic objects. Gridding will be used to develop an image of the geophysical data. Selected anomaly locations and geophysical data images will be provided in a GIS compatible format (.csv, GeoTIFF) and will constitute the data deliverables. Data deliverables will be provided within 48 hours of the completion of data acquisition. Raw and processed data may also be provided in ASCII format upon request.

After data images and selected anomaly locations have been delivered, additional anomalies may be selected at the direction of SoCalGas.

Anomaly Reacquisition

ⁱ There is no way to shield the influence of the large metallic objects. A handheld detector may be able to get a few feet closer than an EM61 before they 'saturate' and can no longer distinguish small pieces of metal.

Geophysical anomalies identified during data processing may be selected for intrusive investigation. Prior to intrusive investigation, anomaly locations will be identified using RTK/VRS GPS. The anomaly will then be reacquired and confirmed using an EM61-MK2, and its location further refined using either the EM61-MK2 or a hand-held metal detector. Reacquired anomaly locations will be marked with vinyl pin flags for subsequent intrusive investigation. A Blade representative will be involved in all anomaly reacquisition and intrusive investigations.

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9.9 Wireline Logging – Tubing Inspection Work Plan

The work plan for Baker follows.

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To be added / updated with revised version.

DRAFT

9.10 Wireline Logging – Spectral Noise and Casing Inspection Work Plan

The work plan for Versa-Line follows.

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To be added / updated with revised version.

DRAFT

9.11 Wellhead Cleaning Work Plan

The work plan for Argus follows.

DRAFT

To be added / updated with revised version.

Aliso Canyon Field Test for Pipe Cleaning Southern California Gas Company

PHASE 1 SCOPE OF WORK:

Project involves the cleaning and paint removal of Well Head “SF 8” and Withdrawal Piping. The cleaning and paint removal will be accomplished by the following methods.

A regulated area will be setup by placing caution tape around the work area. 6 mil fire retardant poly sheeting will be placed under and around surfaces to be cleaned to capture debris and water during cleaning. Well Head and piping will be cleaned of loose dirt and debris before both Peel Away Smart Strip Pro is applied and Hydroblasting is started (see Attachment A below for Smart Strip Pro product description & Attachment B below for Hydroblasting equipment description). To expedite the Hydroblasting cleaning/coating removal and reduce the amount of water used, Argus will apply Smart Strip Pro to the surfaces to be Hydroblasted. The Smart Strip on the surfaces will be wrapped with 2 to 4 mil poly sheeting. Wrapping the surfaces covered with chemical keeps it from drying out or washing off from rain or condensation. Once the Hydroblasting is started the 2 to 4 mil poly sheeting will be removed.

PHASE II SCOPE OF WORK:

If the above method is approved and works, as outlined in Phase 1 above, Argus will clean and remove the paint from Well Head SS 25 “Tree” extending above the temporary bridge. The cleaning and paint removal will be accomplished in the same manner as listed in Phase 1.

PHASE III SCOPE OF WORK:

If the above method is approved and works, as outlined in Phase 1 above, Argus will clean and remove the paint from Well Head SS 25 extending below the bridge. Argus will erect suspended scaffolding from the temporary bridge that will be designed by a licensed engineer and a stamped drawing will be furnished before scaffolding erection is started. The cleaning and paint removal will be accomplished in the same manner as listed in Phase 1.

PERSONNEL PROTECTION:

Workers will wear full face negative pressure respirators with combination Gas & Vapor cartridges and P100 HEPA particulate filters when performing other setup work. Tyvek full body disposable suits, steel toe rubber boots, disposable rubber gloves, full body harnesses and all other safety equipment required to perform scope of work.

AIR MONITORING:

Argus must test (sniff) the air utilizing Argus’s 4 Gas Monitor before each time workers enter work area and periodically during work activities. In addition to the 4 Gas Monitor

one worker shall wear a personnel H2S and a personnel CO monitor at all times while working.

OSHA personal air monitoring for heavy metals will be conducted by Argus as per our company protocol.

GENERAL PREPERATION:

- Permitted Fire Extinguishers to be placed at each work area.
- Daily Safety Meetings will be held.
- Supervisors on site are CPR / First Aid Trained.
- Emergency Phone Numbers to be posted in a conspicuous location.
- Our foreman will have phone capability.
- SDS for all chemicals introduced to site will be on site, and available for inspection upon request. Lead caution tape with signage will be placed outside the regulated areas.
- Waste material generated will be kept on site as evidence from the removal process. Waste will be bagged and placed in a disposal container or package and placed in a properly labeled 55-gallon sealed steel drum that will be lined with plastic and left on site to be stored by the Gas Company.

OCCUPANTS/VISITOR/CONTRACTOR PROTECTION STATEMENT:

Argus Contracting LP has engineered the abatement procedures to afford visitors and other contractor personnel the utmost in protection against exposure to materials being removed. Argus Contracting LP will continue to communicate with these groups throughout the project, to insure that they are kept informed throughout the abatement process.

WORKER CERTIFICATIONS:

All workers who are involved in the cleaning/abatement process will be required to have participated in the required training and medical programs for Asbestos & Lead certification. Certifications of participants in these programs will be made available to The Gas Company for review. Copies of same will be on-site during the abatement process.

FALL PROTECTION PLAN (If Required):

- All Fall Protection shall meet all applicable OSHA and ANSI Standards which includes Full Body Harnesses, Lanyards, Self-Retracting Lanyards and all anchorage points and connectors.
- All workers will don Full Body Harness and double leg lanyards and attach to an approved anchorage point(s) before entering lift and top of tank.
- All workers working from the scaffolding must be connected to a Self-Retractable Lanyard that will be anchored to the temporary bridge. Worker

must connect to the Self-Retracting Lanyard before accessing the scaffolding. AT NO TIME WHILE WORKING IN THE SCAFFOLDING SHALL A WORKER BE UNHOOKED. WORKERS MUST BE 100% TIED-OFF AT ALL TIMES ON SCAFFOLDING.

- Defective equipment will IMMEDIATELY be removed from project, tagged and discarded and replaced with new equipment.
- A safety task analysis shall be filled out and reviewed with all crew members before any work is started.

METHOD of PROMPT SAFE REMOVAL

At all times, at least one employee with current training in First Aid and CPR shall be on the project. If an

Employee is injured, a supervisor/foreman trained in First Aid will evaluate the employee's condition and

administer first aid. If the condition appears serious, the supervisor or designated person will:

- Initiate emergency medical response system 911 or other local specific PREARRANGED emergency rescue unit to request assistance.
 - Have select crew members stand by to assist the emergency rescue team.
 - Minor injuries: employees will be transported to the Designated Medical Provider by Supervisor/Foreman or designated representative.
 - Northridge Hospital Medical Center – 18300 Roscoe Blvd, Northridge, CA 91326, (818) 885-8500.
- ❖ **Street Directions From Job Site**
Turn left onto Sesnon Blvd approx. 0.4 miles turn right onto Reseda Blvd and go 5.5 miles. Turn left onto Roscoe Blvd approximately 0.2 miles to Hospital.

TRAINING of EMPLOYEES

- Site specific training of employees for this project will be conducted before any employee's access the work area and the Foreman shall fill out and review with all workers the on-site Argus Site Specific Safety Work Plan.
- The Foreman shall complete an Argus Safety Task Analysis before each shift and will review with all workers on site daily prior to the start of the shift.
- Continuing Training for this project will be a part of the daily tool box safety meeting.
- Employees will immediately receive additional instructions on any special hazard or potential hazards that may arise during the project.

INSPECTION of FALL PROTECTION EQUIPMENT

- All inspections will be conducted by the Supervisor/foremen and employees prior to donning or using any component of the fall protection systems and equipment used on the project.
- All equipment sent to the job site will be checked and inspected by the branch office by the supervisor/foreman or designee prior to shipment to the job site. Checks will be for compatibility, damage, proper operation, wear, mildew, etc.
- Prior to each Shift's use, the employee will inspect his/her own equipment.
- Supervisors will periodically inspect equipment for compliance.

DOCUMINTATION of EMPLOYEE TRAINING

- At job safety orientation, the employee will read and sign a Compliance Agreement (Appendix A) affirming that he/she has read and understands the plan.
- Tool box safety talks will have items discussed and the names of those in attendance documented in addition to the date, time, and identity of the leader of the talk.
- All records and documents will be kept on file at the job site by the supervisor.

Attachment A:

Smart Strip™ PRO Professional Paint Remover is a professional-strength, environmentally friendly paint stripper that effectively removes architectural, industrial, and lead paints. This non-toxic chemical paint removal system is formulated without methylene chloride and is non-carcinogenic, non-caustic, and non-flammable. The heavy-duty paint remover is  **low-VOC, low-odor, biodegradable, and user friendly.**

Smart Strip™ PRO Professional Paint Remover is a safe lead-based paint removal system that delivers the superior performance professionals require when removing even the most difficult coatings. This water-based eco-friendly paint remover will effectively remove multiple coats of varnish, oil-based, water-based, acrylic, urethane, epoxy, elastomeric, and lead paints from any interior or exterior surfaces, such as wood, brick, stone, concrete, plaster, metal, fiberglass, plastic, glass, etc. Because it is a paste, the heavy-duty paint remover is easily applied by brush, roller, or conventional airless spray.

Smart Strip™ PRO Professional Paint Remover is an eco-green product and is formulated to remain wet and effective without the use of our biodegradable **Dumond®** Laminated Paper, allowing fast and easy non-toxic paint removal. (For extended dwell times, **Dumond®** Laminated Paper may be necessary, particularly on lead abatement and industrial projects). Dwell time will vary depending on the type of coating, number of layers, and temperature. For best results, allow the chemical paint stripping paste to dwell overnight or longer. Remove the paste and softened/lifted paint using a scraper. Any remaining residue can be removed with a sponge and water or a power washer. There is no need to neutralize the stripped surface. **Smart Strip™ PRO** Professional Paint Remover is considered one of the best paint strippers as it is perfect for fast and easy chemical paint removal from a variety of surfaces. Architectural cleaning and restoration are safe and efficient when using the heavy-duty **Smart Strip™ PRO** Professional Paint Remover. This environmentally friendly paint stripper covers approximately 40-50 square feet per gallon.

FEATURES AND BENEFITS

- Safe: **Smart Strip™ PRO** Professional Paint Remover is a heavy-duty paint remover that is formulated without methylene chloride or caustic. This water-based remover is low-odor and non-flammable, providing safe lead-based paint removal.
- Effective: This lead paint stripper removes multiple layers of architectural, industrial, and most lead-based paints from any interior/exterior surface in a single application.
-  **Environmentally Friendly: Water-based, low in VOCs, and biodegradable**
- User Friendly: The heavy-duty paint remover is easily applied by brush, roller, or airless spray, and does not require neutralization or the use of our biodegradable **Dumond®** Laminated Paper.

Attachment B:

SURFACE PREPARATION SYSTEM UTILIZING EXTREME PRESSURE WATER UP TO 40,000 PSI WITH RECYCLING

Surface Preparation Equipment consists of the following items:

1. EPS Surface Preparation Truck [Diesel Engine] with 40,000 psi waterblasting unit
 - i. Vacuum Recovery System [Diesel motor powered] 42 HP
 - ii. Vacuum Tank with up to 1,200 gallons of storage
 - iii. Air, Water, Vacuum Hoses
 - iv. 40,000 psi floor machine, gun tools
2. Recycling truck with water storage tanks and separation housings

The following outlines the steps of the process:

1. Water source is connected to the waterblasting system, the EPS technician sets the pressure required to effectively complete the work and turns the vacuum recovery system on.
2. The water blasting system consists of a reciprocating pump able to operate at a maximum of 40,000 psi and up to 6 gpm. The system contains both the high-pressure pump and a compressor capable of running the removal tools.
3. The removal tool combines the cleaning power of up to 40,000 psi water. The removal tool is used to blast the paint or mastic off the walls and ceilings.
4. During the removal operation the water is vacuumed up inside containment and into the vacuum tank outside the building.
5. The vacuum system contains shut-off valves to automatically prevent the spillage of removed debris. Vacuum exhaust air is filtered and utilizes HEPA air filtration. The vacuum system is capable of depositing removed debris into bags, 55 gallon drums or roll off bins for waste disposal.
6. After operating for up to 1-4 hours, the EPS technician pumps the recovered water from the vacuum tank
 - a. If recycling is being used, the recovered water is pumped through the EPS recycling unit. The recycled water is then pumped back into Extreme Pressure Waterblasting System. The recycling system was designed to reduce the amount of water requiring disposal at the end of the project.
 - b. The EPS recycling system allows for a significant reduction in the quantity of recovered water at the completion of the project. It is estimated that after using the EPS recycling system for 5 days, there would be approx 1,000 gallons of water to be disposed of compared to 12,000-15,000 gallons if not used.
7. Liquid and Solid Waste –
 - a. Liquid & Solid waste
 - Liquid remaining at the end of the job will be properly stored and left on site as evidence and to be handled by Gas Company.

Appendix A
Compliance Agreement
COMPANY COPY

I, _____ (print name) have reviewed a copy of the above Work Plan for the Aliso Canyon Field Test for Pipe Cleaning Project. I have read the plan, understand it, have received training in its design and implementation requirements and agree to comply with all its provisions. I understand that I could be prohibited from working at the job site for violating any of the safety requirements in the plan.

Signed:

Signature

Date

Project Manager/Supervisor/Foreman

DRAFT

Appendix A
Compliance Agreement
EMPLOYEE COPY

I, _____ (print name) have reviewed a copy of the above Work Plan for the Aliso Canyon Field Test for Pipe Cleaning Project. I have read the plan, understand it, have received training in its design and implementation requirements and agree to comply with all its provisions. I understand that I could be prohibited from working at the job site for violating any of the safety requirements in the plan.

Signed:

Signature

Date

Project Manager/Supervisor/Foreman

DRAFT