From: Jack Grobe
Sent: Tuesday, August 26, 2008 6:32 AM
To: Jon Thompson; Leonard Olshan; Melanie Wong
Cc: Joseph Giitter; Tim McGinty
Subject: Fw: Kick off for Risk Analysis of the Failure of the Jocassee and Keowee Dams to Assess the Potential Effects on the Safe Shutdown facility of ONS

FYI
Jack Grobe, Associate Director
Office of Nuclear Reactor Regulation

----- Original Message -----
From: Freudenberger, Richard J <rjfreudenberger@duke-energy.com>
To: Jack Grobe
Cc: Baxter, David A <dabaxter@duke-energy.com>; Nader, Stephen L <slnader@duke-energy.com>
Sent: Thu Aug 21 18:26:25 2008
Subject: Kick off for Risk Analysis of the Failure of the Jocassee and Keowee Dams to Assess the Potential Effects on the Safe Shutdown facility of ONS

Jack,

Dave asked me to contact you to inform you of the kickoff meeting for the subject analysis and to request that you attend and/or authorize some interested parties from your organization to attend all or selected portions of the activities. The kickoff meetings are scheduled the week of September 15th at the Oconee Nuclear Station. The session on Monday will include initial introductions and visits to both the Jocassee and Keowee dams. Detailed discussions of the project objectives, methods, and schedules will be conducted on September 16, 17, and 18. On Friday, September 19th, there will be a management debrief followed by a wrap-up of action items and next steps.

Attached is the proposal for the project. Feedback on it is welcome.

Rich

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June 23, 2008

Mr. Stephen L. Nader
Engineering Supervisor
Probabilistic Risk Analysis
Nuclear Generation Department
Duke Energy Corporation
EC081
PO Box 1006
Charlotte, NC 28201-1006

Dear Steve:

Proposal for a Risk Analysis of the Failure of the Jocassee and Keowee Dams to Assess the Potential Effects on the Safe Shut Down Facility of the Oconee Nuclear Station, South Carolina

RAC Engineers & Economists (RAC) is pleased to submit this proposal to the Probabilistic Risk Analysis (PRA) Group in the Nuclear Generation Department of the Duke Energy Corporation (Duke) for conducting a Risk Analysis of the Jocassee and Keowee Dams. Our proposal is submitted in response to your verbal request at the end of an exploratory field trip and meetings on November 8 and 9, 2007. We have based our proposal on our discussions with Duke personnel during the field trip and meetings, on our preliminary review of various materials provided by Duke and our conference call on May 14, 2008.

RAC has more than two decades of experience with applying dam safety risk assessment (RA) for decision-support purposes in North America, Australia and Europe. We have pioneered the state of the practice in this field for almost three decades. We served as the principal consultants to the Bureau of Reclamation (Reclamation) during their transition to using RA in the mid-1990s. Currently we are assisting Headquarters of the US Army Corps of Engineers (USACE) with the development and implementation of procedures, policies and methodology for RA and portfolio RA in a collaborative effort that includes Reclamation and the Federal Energy Regulatory Commission (FERC). In total we have conducted RAs on more than 600 dams. We are also involved with the development and review of guidance documents for dam safety RA for owners, regulators and professional bodies in the US, Canada, Australia and England and for the International Commission on Large Dams (ICOLD).

This proposal comprises the following five sections: Project Objectives and Expected Outcomes, Scope of the Risk Analysis, Summary Work Plan and Schedule, Risk Analysis Team Composition and Estimate of RAC Costs.

1. Project Objective and Expected Outcomes

The Jocassee and Keowee Dams are located upstream and adjacent to the Oconee Nuclear Station, respectively. Failure of one or both of these dams would result in high water levels in the area of the

Oconee Nuclear Station, which could affect the capability for a safe shut down of generation at the station. Of particular interest is the potential for flooding of the Safe Shut Down Facility (SSDF) at the Station.

The Oconee Nuclear Station is owned the Duke Energy Corporation and operated by Duke's Nuclear Generation Department. It is regulated by the Nuclear Regulatory Commission (NRC). The top cut set in the probabilistic risk analysis of the Oconee Nuclear Station involves a dam break inundating the SSDF. Therefore, both Duke and the NRC are interested in examining the potential for failure of the Jocassee or Keowee Dams and the effect on the safe shut down of the Oconee Nuclear Station.

The Jocassee and Keowee Dams are owned by Duke and operated by Duke's Hydro Generation Department. The dams are regulated by the Federal Energy Regulatory Commission (FERC). The FERC requires that a Potential Failure Modes Analysis (PFMA)[1] be conducted on all dams that it licensees. A PFMA was completed on for Jocassee Dam in 2004. At this time the FERC does not require that PFMA be extended to a quantitative or probabilistic risk analysis, although the FERC is exploring the use of risk assessment in its dam safety program and has asked for RAs on two dams provide input to its decision process for determining the level of risk reduction that is justified[2]. Therefore, probabilistic risk analyses have not been conducted on the Jocassee and Keowee Dams. However, following the failure of the Taum Sauk Project in 2005, the FERC required licensees with pump-back storage to conduct a "fault tree" analyses of the pump-back storage operations. If such a fault tree analysis was prepared and submitted to the FERC for the Jocassee Dam this should be reviewed and considered for use in this risk analysis.

The overall objective of the proposed risk analysis of the failure of the Jocassee and Keowee Dams is understood to be as follows:

> *To apply dam safety risk analysis, including uncertainty analysis, to provide an estimate of the probability of random failure modes for the Jocassee and Keowee Dams in their existing condition and the inundation pathways that could threaten the successful functioning of the Safe Shut Down Facility at the Oconee Nuclear Station. Random failure modes are defined to include all non-seismically-induced failure modes, including those under flood and normal operating conditions including consideration of the performance of the spillway gates and the pump-back operations.*

[1] RAC's Dr. David S. Bowles was a member of the three-person Advisory Team for the FERC's Division of Dam Safety and Inspections, Office of Energy Projects, Washington DC, for the development of its PFMA procedure. RAC's Dr. Loren R. Anderson was selected to conduct some of the first PFMAs for several FERC projects during a period of early testing of the PFMA procedure. He has since conducted many PFMAs for FERC projects using the final FERC PFMA procedure. He has conducted similar studies for hundreds of other dams over the past two decades as an initial step in dam safety risk analyses.

[2] RAC's Dr. David S. Bowles served as the facilitator for these FERC RAs. At this time the FERC is considering the owner's proposal for risk reduction measures, which is based on the RA that was conducted by RAC in collaboration with the design engineer for these projects.

It is expected that the proposed study will provide the following specific outcomes:

- An improved understanding of the potential random failure modes for the Jocassee and Keowee Dams.
- An improved understanding of the potential inundation pathways and a range of time lines for inundation to occur at the SSDF at the Oconee Nuclear Station as a result of various potential random failure modes for the Jocassee and Keowee Dams.
- A quantitative estimate, with uncertainty, of the probability of failure of the Jocassee and Keowee Dams.
- A quantitative estimate, with uncertainty, of the probability that failure of the Jocassee or Keowee Dams would lead to various conditions that could threaten the successful functioning of the Safe Shut Down Facility at the Oconee Nuclear Station.

2. Scope of Risk Analysis

It is proposed that this risk analysis will be based on current practice as developed and applied by RAC for the US Army Corps of Engineers and others. Based on our discussions in November 2007, the approach that we use for dam safety risk analysis appears to be highly compatible with the approach used by the Duke Probabilistic Risk Analysis group. However, the specifics of the approach will be carefully coordinated with the Duke Probabilistic Risk Analysis group with the goal of ensuring eventual acceptance by the NRC.

It is our understanding that the following, which are commonly included in comprehensive dam safety RAs, are not required for this study:

- Consideration of seismically-induced failure modes for the Jocassee and Keowee Dams.
- Estimation of economic, life-loss or other consequences associated with each failure mode.
- An evaluation of the existing risks of dam failure against life-safety tolerable risk guidelines.
- Consideration of risk reduction alternatives for the Jocassee and Keowee Dams or to reduce the risk of impacts to the SSDF.

The potential for the cascade failure of the Jocassee and Keowee Dams will be considered. The potential effects of the failure of Bad Creek reservoir, which is upstream of Jocassee Dam, or the failure of Little River Dam failure on Lake Keowee, will also be considered.

The uncertainty analysis proposed as part of the risk analysis of the Jocassee and Keowee Dams will be designed to carefully separate natural variability (aleatory uncertainty) and knowledge uncertainty (epistemic uncertainty) to the extent that this is practicable.

In general, risk analysis inputs will be built on available information, including but not necessarily limited to the following for the Jocassee and Keowee Dams: design documents, construction records, monitoring and surveillance information, FERC Part 12 reports, the December 2004 PFMA, and inputs from the Duke maintenance and operations personnel and Duke engineers and consultants who have experience with the Jocassee and Keowee Dams.

The level of detail in the proposed risk analysis will be an important factor that should be determined to provide an adequate level of defensibility for Duke and to satisfy the NRC's requirements for probabilistic risk analyses. The level of detail will be dependent on the availability of information on

which to base estimates of project performance and the limitations in technical capabilities for predicting the performance of the Jocassee and Keowee Dams. Similarly, the level of detail will need to be determined for the consideration of the potential inundation pathways (including any protective dikes, underground passages, etc) and a range of time lines for inundation to occur at the SSDF at the Oconee Nuclear Station as a result of various potential random failure modes for the Jocassee and Keowee Dams. It is highly desirable that two-dimensional dam breach and flood inundation modeling should be conducted to adequately represent the flood plain area below the Keowee Dam, including the effects of Big Bend and the highway bridge.

It is proposed to incorporate the effects of knowledge uncertainty in the risk analysis by using an uncertainty analysis. It may be that the estimates of the probability of failure of the Jocassee and Keowee Dams are sufficiently small and insensitive to the uncertainty associated with the level of detail that can be fairly readily achieved based largely on existing information. Alternatively, it may be that the desired probability estimates are sensitive to at least some of the risk analysis inputs for which more in-depth investigations and analyses can be conducted. This proposal allows for some identification of the potential effects of such additional investigations and analyses, but it does not include effort to conduct these investigations or analyses or to repeat risk analyses with more refined inputs following completion of additional investigations or more in-depth analyses to strengthen the basis for estimates of the performance of the study dams and the characterization of the inundation pathways.

3. Summary Work Plan and Schedule

Table 1 contains a list of tasks that will be performed in the proposed study. It also contains a summary of the proposed roles for Duke and RAC in performing each task. Three Project Working Sessions (Trips) are planned, as follows:

1) Site Visit, Team Inputs and Scoping of Supporting Studies
2) Additional Team Inputs
3) Presentation of Results and Development of Findings

The relationship of each task to these Working Sessions is indicated in Table 1. Further details on the tasks are provided below.

Task 1. Project Initiation

1.1 Review materials provided by Duke
1.2 Agree approach to regulator involvement in the study

Task 2. Site Visit, Team Inputs and Scoping

2.1 Conduct site visit
2.2 Identify potential failure modes
2.3 Develop event trees
2.4 Estimate system response probabilities
2.5 Develop approach to dam break inundation analyses and SSDF pathway analysis
2.6 Agree level of detail for estimating risk analysis inputs
2.7 Agree on format of risk analysis results

A site visit to the Jocassee and Keowee Dams will provide an important opportunity for the Risk Analysis Team to commence the identification of potential failure modes (Task 2.1). Team members who will be involved only in the pathways analysis for the SSDF of the Oconee Nuclear Station should inspect the area between Keowee Dam and the SSDF.

RAC's Dr. Loren R. Anderson will facilitate Working Sessions 1 and 2 to develop important risk analysis inputs, including the following: engineering assessment against FERC's Engineering Guidelines and accepted practice; identification of potential failure modes, building on the December 2004 PFMA report for the Jocassee Dam; development of event trees; estimation of system response probabilities, including identification of supporting analyses needed to provide a basis for their estimation (Tasks 2.1 - 2.4), and estimation of dam breach parameters for each potential failure mode (Task 2.5).

RAC's Dr. David S. Bowles will coordinate with Duke's PRA Group and Mr. Chris Ey to agree the overall approach to the dam break inundation analyses, and with the Duke PRA Group to agree the overall approach to the SSDF pathway analysis (Task 2.5).

An important goal for Working Session 1 will be to agree on the level of detail (Task 2.6) needed to estimate all risk analysis inputs and on the specific assignments for the necessary supporting studies to develop these inputs. The results of supporting studies needed to inform the system response probability estimation process will be presented at Working Session 2 where final estimates for all risk analysis inputs will be made.

The choice of the level of detail and the corresponding effort needed for estimating risk analysis inputs will be closely coordinated with consideration of the format for risk analysis results (Task 2.7) and any requirements for information from the risk analysis by Duke's regulators. It will therefore be important for Duke decision process and its approach to regulatory participation in this risk analysis to be determined and communicated to the Risk Analysis Team at the outset of the project (Task 1.2).

Task 3. Supporting Studies

3.1 Estimate flood AEP relationships, including for gate failure cases
3.2 Develop various reservoir relationships, including stage-duration and stage-duration relationships
3.3 Coordinate with Mr. Chris Ey on dam break inundation analyses
3.4 Coordinate with the Duke PRA group on the SSDF pathway analysis
3.5 Coordinate with the Duke PRA group on the spillway gate and pump-back storage operations reliability analyses

The proposed assignment of responsibilities for each of the Task 3 supporting study tasks is listed in Table 1. Close communication between Duke, RAC and any other parties who are assigned a role in supporting studies will be important to coordinate all supporting analyses. It is proposed that frequent conference calls will be held for this purpose.

Task 4. Risk Analysis for Existing Dam and Operating Restrictions

4.1 Develop risk analysis model
4.2 Conduct existing dam risk analysis
4.3 Conduct uncertainty and sensitivity analyses

The risk analysis calculations will be performed using RAC software similar to that applied for USACE and FERC risk analyses that RAC has conducted. The software will be adapted for this project. The uncertainty analysis will separate variabilities (aleatory uncertainties) and knowledge uncertainties (epistemic uncertainties). Estimated probabilities of failure will be presented in terms of percentiles of variability and percentiles of knowledge uncertainty.

Task 5. Final Report and Development of Outcomes

5.1 Prepare report
5.2 Present results and facilitate develop of findings

A report will be prepared by RAC with assistance from Duke and other consultants. The report will document the risk analysis process, inputs and results. Supporting studies will be documented in report appendices. Results of the risk analysis will be presented to Duke in Working Session 3. RAC will facilitate a discussion to develop a consensus position on the project findings amongst the Risk Analysis Team. In addition, a briefing can be provided to Duke management and the NRC and FERC, during the same trip, if desired.

Figure 1 is a Preliminary Project Schedule for this risk analysis project. It is based on an assumed starting date of September 1, 2008.

4. Risk Analysis Team Composition

RAC personnel proposed for this project are as follows:

- Dr. David S. Bowles, P.E., Managing Principal - RAC Project Manager with overall responsibility for all RAC activities and formal communications with the Duke. Specific responsibility for the overall risk analysis, for formulation, presentation, evaluation of risk analysis results, and for advice on H&H aspects, including dam break and flood inundation modeling.
- Dr. Loren R. Anderson, P.E., Principal - Specific responsibility for engineering performance aspects, including failure modes identification, event tree development, and system response probability estimation, including advice on supporting analyses.
- Dr. Sanjay S. Chauhan, Senior Staff Engineer - Specific responsibility for risk analysis calculations and advice on H&H aspects.

RAC's Dr. Terry F. Glover is available to estimate the economic consequence of the various potential dam failure modes, although this is outside the current scope of work. Similarly, if there is an interest in extending the project scope to include life-loss estimation, the LIFESim model, which we have developed for, and which is being adopted by, the US Army Corps of Engineers could be used for this purpose. LIFESim has recently been applied to the two FERC dams under the RA, which has just been presented to FERC Headquarters in Washington, DC, and which is mentioned in Section 1 of this proposal.

It will be important for the Risk Analysis Team to include key engineers who have worked on the Jocassee and Keowee Dams in the past. Candidates would include the following: Mr. Edwin Luttrell who has worked on these dams; Mr. George Kelley who facilitated the FERC PFMA for these dams; Dr. Craig Findlay who has served as the FERC Part 12 Independent Consultant; and Mr. Chris Ey who conducted previous dam breach analyses for these dams. In addition, any engineers from Duke's Hydro Generation

Department who are familiar with the dams and other participants in the FERC PFMA could provide a valuable contribution to the team. It will be essential that the PRA Group from Duke's Nuclear Generation Department be represented on the Risk Analysis Team and Mr. Allen Nicholson, Maintenance Supervisor, should be members of the team. These Team members will participate in all or some of the Working Sessions, be responsible for various supporting studies (see proposed Duke role in Table 1), and participate in the development of findings at the presentation of results in Working Session 3. **We would like to have an opportunity to discuss the composition of the Risk Analysis Team with Duke**. We have found it helpful to make the following distinctions in establishing such Teams:

a) **Core Team members** who will participate in all Team Working Sessions lead by the RAC facilitators. They should include a mix of (sub) disciplines with expertise in the various technical aspects that apply to the study dams.
b) **Supporting Team members** who will provide specialized inputs, and will participate in Team working sessions only as needed. Examples of these specialized inputs may include the following: dam break modeling, emergency operations, and flood loading. Supporting Team members should attend the briefing on the risk analysis process, which is planned for near the beginning of Working Session 1.

c) **Duke Decision-makers** who will be responsible for making the decisions that will be informed by the results of this project. These may include senior management or executives from Duke's Hydro Generation and Nuclear Generation Departments, for example. They would not be expected to participate in Working Sessions but should be present for all briefings. It is recommended that Duke determine at the outset (Task 1.2) what approach it will take to keeping its decision makers and its regulators, the NRC and the FERC, informed about this project.

d) **Observers** who may be present at the Team Working Sessions so that they can become familiar with risk analysis and using its results. Observers will be encouraged to participate in Team activities to the extent that they are prepared and qualified to do so since this will enhance the training and familiarization benefit that they can expect to derive. However, their inputs may not be used in formulating risk analysis inputs. The number of observers should be limited to avoid reducing the effectiveness of the Core Team. It is suggested that Duke might wish to consider including some observers if it has other Nuclear Power Plants that are potentially affected by upstream dam failure, or cooling water supplies that are affected by dam failure. In addition, Duke's Hydro Generation Department may wish to nominate some observers considering that the FERC is actively engaged in an evaluation how risk analysis can be used to strengthen its dam safety regulatory program. It is likely that the FERC would be interested in having a representative attend the potential failure modes Team Working Session, since they normally participate in such sessions. It is possible that the FERC may wish to have one or more representatives participate in other Team Working Sessions, since the FERC is known to be interested in gaining experience with conducting risk analyses of their projects. In addition, the NRC is known to have an initiative to strengthen the way in which dam failures can affect nuclear power plant safety and so it is possible that they may be interested in having an observer at the Team Working Sessions. The decision on participation of regulatory personnel in Team Working Sessions belongs to Duke.

It is possible that Duke may wish to retain one or more **Review Consultants** for this project. RAC suggests that Dr. Francisco Silva would be excellent choice for this role. Following typical practice for dam safety RAs, we suggest that the Review Consultant(s) should take a participative approach to their role. Hence they would participate in all Risk Analysis Team working sessions in addition to reviewing team working documents and the draft final report.

In addition to the above, it is important that Duke designate a **Technical Coordinator** who will be empowered to coordinate Duke's in-house activities and other consultants in support of this study. The Technical Coordinator's responsibilities can be expected to include the following: 1) Duke's arrangements and assignments for Working Sessions; 2) management of supporting analyses that will be conducted by Duke or other consultants, including any Review Consultant(s), so that they will be completed on schedule and in the form needed for the study; 3) coordination with RAC; 4) communications with the regulators; and 5) coordination with Duke management to maximize the value of this project for the Duke's decision-making process.

5. Estimate of RAC Costs

The attached Table 2 is a summary of RAC's cost estimate for this project. Table 3 contains an estimate of RAC effort divided by tasks. The total estimated cost is $399,821 for RAC, including Dr. Silva's professional time and expenses for serving as a Review Consultant. However, Duke may prefer to contract separately with him and we can provide his contact information to Duke if desired.

Some supporting details for travel are provided in Tables 4 – 6. RAC's estimate for the cost of professional effort can be considered a "not-to-exceed" estimate unless the proposed work scope is altered, including the addition of working sessions or other project meetings or presentations beyond those included in this proposal. Various assumptions on which our cost estimate is based are listed below Table 2. RAC's assumed role for each task is summarized in Tables 1 and 3. Travel and other expenses are proposed to be invoiced on an actual cost basis.

Additional costs will be incurred by Duke for dam breach and flood inundation supporting studies, the participation of other engineers on the Risk Analysis Team, such as Mr. Edwin Luttrell, Mr. George Kelley, Dr. Craig Findlay and Mr. Chris Ey, as described in Section 4 of this proposal. Also, Duke will presumably incur some in-house costs for participation of its PRA group and engineers from its Hydro Generation Department and any supporting or SSDF pathways analyses that are conducted in-house. In addition, it will be important to coordinate with Duke's regulators, the NRC and the FERC before commencing this risk analysis project.

We look forward to working with Duke on this important project. If you have any questions about this proposal, please do not hesitate to contact me by email at bowles@cache.net, or on my cell phone at 435.770.8709.

Sincerely

David S. Bowles, Ph.D., P.E., P.H., D.WRE, F.ASCE.
Managing Principal

Figure 1. Preliminary Project Schedule Based on September 1, 2008 Starting Date.

Task	Relationship of Tasks and Trips			2008				2009							
	1	2	3	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Working Sessions associated with Trips				1			2							3	
1 Project Initiation															
1.1 Review materials provided by Duke															
1.2 Agree approach to regulator involvement															
2 Site Visit, Team Inputs and Scoping															
2.1 Conduct site visit	X														
2.2 Identify failure modes	X														
2.3 Develop event trees	X	X													
2.4 Estimate system response probabilities	X	X													
2.5 Develop approach to dam break inundation analyses and SSDF pathway analysis	X														
2.6 Determine level of detail for estimating RA inputs	X														
2.7 Agree on format of RA results	X	X													
3 Supporting Studies															
3.1 Estimate flood AEP relationships including for gate failure cases	X	X													
3.2 Develop various reservoir relationships including existing stage-duration	X	X													
3.3 Coordinate with Mr. Chris Ey on dam break inundation analyses	X	X													
3.4 Coordinate with Duke PRA group on SSDF pathway analysis	X	X													
3.5 Coordinate with Duke PRA group on spillway gate and pump-back storage operations reliability analyses	X	X													
4 Risk Assessment for Existing Dam															
4.1 Develop RA model															
4.2 Conduct existing dam risk analysis															
4.3 Conduct uncertainty and sensitivity analyses															
5 Final Report and Development of Outcomes															
5.1 Prepare final report															
5.2 Present results and facilitate develop of findings			X												
6 Project Management															

Table 1. Proposed tasks, roles for Duke and RAC, and relationship of tasks to Working Sessions

Task	Proposed Duke Role	Proposed RAC Role	Relationship of Tasks and Trips		
			1	2	3
1 Project Initiation					
1.1 Review materials provided by Duke	Provide	Conduct			
1.2 Agree approach to regulator involvement	Lead	Advise			
2 Site Visit, Team Inputs and Scoping					
2.1 Conduct site visit	Conduct	Participate	X		
2.2 Identify failure modes	Assist	Facilitate	X		
2.3 Develop event trees	Assist	Facilitate	X	X	
2.4 Estimate system response probabilities	Assist	Facilitate	X	X	
2.5 Develop approach to dam break inundation analyses and SSDF pathway analysis	Assist & Decide	Facilitate	X		
2.6 Determine level of detail for estimating RA inputs	Assist & Decide	Facilitate	X		
2.7 Agree on format of RA results	Assist & Decide	Facilitate	X	X	
3 Supporting Studies					
3.1 Estimate flood AEP relationships including for gate failure cases	Review	Conduct	X	X	
3.2 Develop various reservoir relationships including existing stage-duration	Review	Conduct	X	X	
3.3 Coordinate with Mr. Chris Ey on dam break inundation analyses	Review	Coordinate and Review	X	X	
3.4 Coordinate with Duke PRA group on SSDF pathway analysis	Conduct	Coordinate and Review	X	X	
3.5 Coordinate with Duke PRA group on spillway gate and pump-back storage operations reliability analyses	Conduct	Coordinate and Review	X	X	
4 Risk Assessment for Existing Dam					
4.1 Develop RA model	Review	Conduct			
4.2 Conduct existing dam risk analysis	Review	Conduct			
4.3 Conduct uncertainty and sensitivity analyses	Review	Conduct			
5 Final Report and Development of Outcomes					
5.1 Prepare final report	Review	Conduct			
5.2 Present results and facilitate develop of findings	Participate & Review	Conduct & Facilitate			X
6 Project Management		Conduct			