Stacia Hoover

From: Alison Guth
Sent: Friday, December 23, 2005 10:46 AM
To: Alan Stuart; 'rammarell@scana.com'; BARGENTIERI@scana.com; 'XANTHAKOS, PANDELIS N'; 'Gina Kirkland'; 'msummer@scana.com'; 'sbwofford@scana.com'; RMAHAN@scana.com; Kristina Massey; 'bellsteve9339@bellsouth.net'; 'mark_leao@fws.gov'; 'Elymay2@aol.com'; 'truple@sc.rr.com'; 'dchristie@infoave.net'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'kayakduke@bellsouth.net'; 'bill_hulslander@nps.gov'; 'PatrickM@scccl.org'
Subject: Final Operations Meeting Notes

Good Morning Operations Group,

I have attached the final copy of the Nov. 1st meeting notes to this email. I am also posting a copy to the website as well. Thanks to all for your involvement in this and for all of your comments. I hope everyone has a wonderful holiday weekend.
~ Alison

November 1st Operations Notes....

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
November 1, 2005

final 12-23 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Lee Xanthakos, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Sally Wofford, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Mark Leao, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Dick Christie, SCDNR
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
Bill Marshall, LSSRAC
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers

DATE: November 1, 2005

ACTION ITEMS:

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- Discussion on the content of a Model
- Review of stakeholder interests
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DATE OF NEXT MEETING: **December 6, 2005 at 9:30 a.m.**
Located at the Lake Murray Training Center

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He introduced Lee Xanthakos as the presentation speaker and noted that the purpose of the RCG would be to try to identify resource specific issues. Alan noted that because SCE&G was using the TLP it would be a cooperative process. He mentioned that the difference between cooperative and collaborative had been a topic of confusion.

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He noted that he manages the system control room in the Palmetto center downtown.

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Lee showed that SCE&G was connected to 5 other control areas.

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- Fossil fuel plants
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- Hydro – noted that there is Fairfield Pumped Storage, Saluda, and a few run of the river plants such as Parr and Neal Shoals

George Duke asked what the capacity of Fairfield was.

Lee explained that it was 560 MW. Lee began to explain the meaning of peak demand. He noted that in the summer the peak is late in the day and in the winter the peak is in the morning. In the summer you pump in the early morning. In the winter you pump at noon, although it varies from day to day.

George asked if this depended on weather cycles and Lee replied: "Very much, if there is flooding we cannot run Fairfield." He noted that it was a license requirement that Fairfield cannot generate if the river flow is over 40,000 cfs.

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Lee noted that an ACE stood for Area Control Error. He noted that a lack of balance causes flow between control areas.

George Duke asked: "When you plan do you plan at some percent capacity?."

Lee Xanthakos replied: "If a plant is on line we get a report on dependable capability, and we run at that number. If you have a problem then you have contingency reserves. And Saluda is an important reserve."

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Gina Kirkland pointed out that hydro was one of the cleanest powers you could have in terms of what is good for the environment.

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He pointed out that just because Saluda is running doesn't mean that SCE&G directly needs the power; it could mean another member of their reserve sharing group had an outage. He noted that for their problems they usually call Duke because they have hydro and that is the most reliable.

He noted that in the VACAR contract, if they have to call on another company for reserves we pay the price to generate the power +10%.

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Patrick Moore noted that many stakeholders have addressed the formation of a process group.

Randy Mahan replied, "I don't think that is necessary, if there is a procedural issue that needs to be resolved, we will create an ad hoc group. But I believe that creating one now is a solution waiting for a problem."

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Steve Bell noted that if some individuals feel that they need to meet aside, informally, they could do so to develop recommendations.

Randy Mahan replied, "I think we tried to make it clear that if you have recommendations you can submit them; however, Saluda Relicensing is not a democratic process, it is a cooperative process."

Gina Kirkland noted that not everyone is going to be completely happy, but you have to come to a consensus as a group.

Randy Mahan noted that SCE&G has a responsibility to take a recommendation and try to achieve consensus on a topic. He also noted that anyone can submit comments to the FERC on their own, as well.

Dick Christie pointed out that consensus is a decision that everyone can live with. It may benefit one individual more than another but it is a decision that most people can live with.

Gina Kirkland added that there is always someone who is not happy and cannot live with it, there are extremes that are unhappy but you can usually get consensus from "almost everyone".

Steve Bell asked, "What happens if the group agreed, for example, that the lake levels should be a certain height."

Randy replied that a consensus guides what SCE&G puts in the application packet and in turn goes to the FERC. If a consensus is reached and SCE&G disagrees, then SCE&G states that they disagree and why they do so, then the FERC will decide the outcome. He noted that individuals also have the option of filing a comment on this separately.

Alan noted that if everyone came to an agreement that a settlement agreement would be the end result.

Dick Christie noted that as far as communication between the groups goes, in other processes they have combined meetings and issues when facilitators decided to do so.

Alan Stuart noted that if this presents itself, they may see the need to combine a meeting.

Bud Badr noted that he believed the function of an Operations RCG would be to get with the other RCGs, take what everyone wants, balance input and needs, and develop a model. Bud continued to note that he has hired 2 more individuals to work primarily with the FERC relicensing issues and will be able to help SCE&G when they need something from DNR.

Alan began to discuss the issue of the "Parking Lot" as presented in the operating procedures. He noted that from a few comments that he has read that he believes there is a misunderstanding about the "Parking Lot". He noted that the parking lot is used for items that are irrelevant to the topic at

hand and disrupt the flow of the agenda. He noted that that particular item would then be placed in the parking lot to be discussed at the end of the meeting or placed on the next meetings agenda.

Randy Mahan then discussed the evolution of an issue. He gave Recreational Flows as an example and noted that you need to first decide what you need to know in order to discuss whether recreational flows are going to occur. Then you take the information and decide whether or not and how to address the issues. Then you decide what info is needed to address the issue, and what you need to know in order to make a reasonable recommendation.

Bud Badr pointed out that you need to make sure you support your issue.

Randy continued to note that they want decisions to be scientifically driven. He also noted that disagreement may arise on whether or not a study needs to be done because there may already be information available. It was also noted that some studies may be combined in order to answer as many questions as possible with one study.

On the topic of a mission statement, Gina Kirkland noted that she thought that a scope of the group needed to be better defined. She noted that she felt that a group could potentially get bogged down with issues that belong in other groups. She pointed out that maybe KA or SCE&G could offer a draft starting point and let the group put meat to it.

The group decided that SCE&G would develop a "strawman" before the next meeting and then discuss it from there.

Alan noted that a homework item would be to take the study requests, read through them, and make recommendations from there.

Randy noted that the long, in-depth studies need to be flushed out first, as they will take more time to accomplish.

Bill Hulslander asked, "Who will conduct the studies and who will decide who will conduct the studies."

Randy replied that the RCG will develop the scope and the TWC will determine the best way to conduct a study.

Alan then brought up the subject of the media; He noted that there was a rule in the operating procedures that a person who is an active member of the media cannot be an active member of an RCG. He noted that there were some individuals who were contributing writers to various

newspapers and if there were problems where information came up in the media, then it will be dealt with. He noted that people need to be able to express themselves without being afraid that what they say will be written about. He noted that if you want to speak to the media afterwards, please do not say that you represent the RCG. However, you may represent your own agency or NGO.

Steve Bell asked if they could have closed meetings.

Randy replied that nothing should arise that would warrant a closed meeting.

Alan noted that they would be taking the operating procedures and revising them per comments submitted.

The group began to discuss homework items. Alan noted that one item for the group to think about would be what sort of presentation or information needed to be presented to the group.

Dick Christie noted that they needed to give thought to the product they would like from a meeting. He noted that different needs could arise and the group should try to pin them down. He continued to note that products are items needed to address in the model, low inflow protocol, operations protocol. He noted that he thought that they needed to make a decision on how recommendations were used.

The group began to discuss the use of the hydraulic model and Bud Badr noted that he would be able to help with this model and give information. He noted that this model would help to make value judgments.

Ray Ammarell noted that he would like to see a presentation that discusses operational requirements, system requirements and such. It was also mentioned that information on the flow forecasting model and Probable Maximum Flood was needed.

Steve Bell asked about standard license articles and Alan noted that he would find these and send them to Steve.

The group closed by outlining the agenda for the next meeting.

In closing, Bill Marshall asked the group if a compromise time could be established, possibly halfway through the day in order to benefit those who are working.

Gina Kirkland responded that an occasional group meeting with all the resource groups in the evening would be okay.

Bill noted that his suggestion would be that they start around 3:00

The group noted that his was a difficult issue. It was discussed that an occasional evening meeting may be okay, however if they started at 3:00 in the afternoon the meeting may last until late at night.

Dick Christie noted that in his experience there will be a critical mass of people who are essential to the meeting. He noted that he doesn't mind going from around 1:00 to 7:00 if those individuals who you would be meeting later for could come every time.

Alan Stuart noted that it may be best that Bill Marshall meet separately with those individuals who cannot attend and keep them up to speed. He noted that he plans to have updates at quarterly Public Meetings.

Bill Argentieri asked if it would be beneficial to start at 1:00 in the afternoon.

Gina Kirkland responded that it would not be beneficial if they wanted to get through all of the agenda items. She noted that if the group is going to cover a lot of stuff and you are resource limited then the group needs to try to get as much accomplished at one meeting as possible.

It was also noted that if the meeting was started later in the afternoon, those traveling from out of town would have to drive back late as well.

The group concluded to keep the next meeting at the 9:30 schedule.

Stacia Hoover

From: Alison Guth
Sent: Wednesday, December 21, 2005 1:45 PM
To: Alison Guth
Subject: FW: Draft Operations Meeting Notes

-----Original Message-----
From: Alison Guth
Sent: Wednesday, November 30, 2005 10:11 AM
To: Alan Stuart; 'AMMARELL, RAYMOND R'; 'bargentieri@scana.com'; 'pxanthakos@scana.com'; 'Gina Kirkland'; 'msummer@scana.com'; 'sbwofford@scana.com'; 'rmahan@scana.com'; Kristina Massey; 'bellsteve9339@bellsouth.net'; 'mark_Leao@fws.gov'; 'Elymay2@aol.com'; 'truple@sc.rr.com'; 'Dick Christie'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'kayakduke@bellsouth.net'; 'bill_hulslander@nps.gov'; 'PatrickM@scccl.org'
Subject: Draft Operations Meeting Notes

Good Morning,

Attached is a copy of the draft November 1st Operations RCG Meeting Notes for your review. Please have comments back to me by December 15th for revisions. You may also present any comments you have on the meeting notes to me before or after the Operations RCG next Tuesday. Thanks for your time.

Regards,
Alison

November 1st Operations Notes ...

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It was also noted that if the meeting was started later in the afternoon, those traveling from out of town would have to drive back late as well.

The group concluded to keep the next meeting at the 9:30 schedule.

Stacia Hoover

From: Alison Guth
Sent: Wednesday, December 21, 2005 1:54 PM
To: Alan Stuart; 'rammarell@scana.com'; BARGENTIERI@scana.com; 'Gina Kirkland'; 'msummer@scana.com'; 'sbwofford@scana.com'; RMAHAN@scana.com; Kristina Massey; 'bellsteve9339@bellsouth.net'; 'mark_leao@fws.gov'; 'Elymay2@aol.com'; 'truple@sc.rr.com'; 'dchristie@infoave.net'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'kayakduke@bellsouth.net'; 'bill_hulslander@nps.gov'; 'PatrickM@scccl.org'
Subject: Draft Operations Meeting Notes

Hello All,

Comments on the draft Operations meeting Notes from November 1st were due on December 15th. I would like to have these notes posted to the website this week so please forward any comments that you may have on them to me by tomorrow morning. Thanks to those of you who have already provided comment. Happy Holidays, Alison

November 1st Operations Notes ...

Attached is an original copy of the draft meeting notes, no changes have yet been made:

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
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West Columbia, SC 29170
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
November 1, 2005

Draft 11-30 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Lee Xanthakos, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Sally Wofford, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Mark Leao, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Dick Christie, SCDNR
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
Bill Marshall, LSSRAC
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers

DATE: November 1, 2005

ACTION ITEMS:

- Draft Mission Statement:
  Randy Mahan

HOMEWORK ITEMS:

- Review ICD and Study Requests
- Think about what information needs to be presented in this group for educational purposes

AGENDA TOPICS FOR NEXT MEETING:

- Develop mission statement
- Discussion on the content of a Model
- Review of stakeholder interests
- Presentation on Saluda
- Review of requested studies and a determination of what information already exists

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
November 1, 2005

Draft 11-30 ACG

DATE OF NEXT MEETING: **December 6, 2005 at 9:30 a.m.**
Located at the Lake Murray Training Center

INTRODUCTIONS AND PURPOSE

Alan Stuart opened the meeting and everyone introduced themselves.

He introduced Lee Xanthakos as the presentation speaker and noted that the purpose of the RCG would be to try to identify resource specific issues. Alan noted that because SCE&G was using the TLP it would be a cooperative process. He mentioned that the difference between cooperative and collaborative had been a topic of confusion.

DISCUSSION

Lee began his presentation on how and why Saluda Hydro operates the way it does.

He noted that he manages the system control room in the Palmetto center downtown.

Lee began to discuss the grid and noted that it was a constant balancing act and they had to work together with other utilities. He mentioned that what SCE&G does is very important to other power companies and visa versa. Lee explained that an example of the grid was the large towers that you see crossing the highway. He explained that electricity travels at the speed of light and noted that if you have a "hiccup" in power anywhere in the country, SCE&G feels it.

Lee presented a map representing the NERC (North American Electric Reliability Council) and noted that each company connects to one another which, in turn, provides a balance of authority.

Lee showed that SCE&G was connected to 5 other control areas.

Bud Badr asked: "How are you connected".

Lee replied: "Our plants are connected directly to their plant by lines."

Lee began to explain how the grid works. He noted that when customers turn on their appliances, and a demand surfaces, it is important for SCE&G to supply the power. He noted that there were three ways to supply power:

- Fossil fuel plants
- Nuclear power plants
- Hydro – noted that there is Fairfield pump storage, Saluda, and a few run of the river plants such as Parr and Neil Shoals

George Duke asked what the capacity of Fairfield was.

Lee explained that it was 560 MW. Lee began to explain the meaning of peak demand. He noted that in the summer the peak is late in the day and in the winter the peak is in the morning. In the summer you pump in the early morning. In the winter you pump at noon, although it varies from day to day.

George asked if this depended on weather cycles and Lee replied: "Very much, if there is flooding we cannot run Fairfield." He noted that it was a license requirement that the river cannot be over 40,000 cfs.

Lee continued to discuss balancing the grid and noted that balance means that there is enough electricity flowing from the generators to meet the Customer's demand. He noted that balance was measured in real time. He pointed out that if SCE&G is over-generating they will call a plant and tell them to cut back and visa versa. He noted that there was a certain order in which plants were taken off and online.

George duke asked: "When you are over generating where does it go?"

Lee explained that in a situation where demand is 4000 and generation is 4000 MW SCE&G is balanced and there is no energy is flowing across the lines. If demand is greater than generation, for example they did not plan well that morning or a plant went offline, SCE&G will take in electricity from neighboring utilities.

Lee noted that they have a meter called "inadvertent" and they try to keep it as close to zero as possible. He noted that if they see they have a negative number of inadvertent they will pump more on the grid…to bring it back to zero. He pointed out that it was called "payback in kind". He noted that if you had everyone putting out or taking in you have a problem.

Lee noted that an ACE stood for Area of Control Error. He noted that a lack of balance causes flow between control areas.

George Duke asked: "When you plan do you plan at some percent capacity.

Lee Xanthakos replied: "If a plant is online we get a report on dependable capability, and we run at that number. If you have a problem then you have contingency reserves. And Saluda is an important reserve."

Lee continued to explain that not all power plants are the same. Nuclear plants are on all the time, if it trips it comes on at 1MW a min, it would take an hour for it to get to 60MW. Natural gas is the same way because it needs to warm up. Lee mentioned that Parr can come on quickly but is not very reliable. Lee explained that another option was to buy power.

Lee noted that the energy from Saluda stays on the grid. He explained that Saluda stays offline until an emergency, In order to be considered reserves it has to be offline and ready. During unbalanced short periods of time other systems supply deficiency in generations.

Steve Bell asked, "Are TVA and Core lakes tied to you?"

Lee replied, "TVA and core lakes are not directly connected to us but are connected to SEPA SOCO etc, our VACAR partners."

Lee explained that imbalances in the system are caused by such things like power plants breaking down, fuel problems, power line problems etc. He noted that SCE&G could return balance by increasing generation or reducing demand by approved programs.

Reducing demand could include a load curtailment program, can choose a plan depending on the scenario.

Scenario 1 – Tomorrow is going to be cold and a large number of plants are offline, SCE&G would do public appeals through the media, large industrial customers will come offline that SCE&G has contracts with to do so.
Scenario 2 – The grid is balanced, but a nuclear station comes offline, He noted that then there is a voltage reduction.

Joy Downs asked, "What if we didn't have Saluda, what would we do."

Lee responded that there were several ways to do this…they could load up all the plants until a plant tripped. They could find alternate generation which would require them to build some other sort of quick start plant.

Gina Kirkland pointed out that hydro was one of the cleanest powers you could have in terms of what is good for the environment.

Lee began to discuss the rules that they operate by. He pointed out that it could be broken down into the NERC, the SERC and then finally VACAR. Lee continued to discuss the grid rules as presented in the presentation. He noted in order to avoid carrying 1000 MW in reserve, which is what they would have to do to stay in compliance with BAL-002-0, which is their most severe single contingency, they have formed a reserve sharing group meaning they are going to carry 200 MW.

He pointed out that just because Saluda is running doesn't mean that SCE&G directly needs the power; it could mean another member of their reserve sharing group had an outage. He noted that for their problems they usually call Duke because they have hydro and that is the most reliable.

He noted that in the VACAR contract, if they have to call on another company for reserves it is the price is the cost of the power +10%.

Joy Downs – "How can you be sure that they actually have an emergency and they are not just buying the power off of the grid."

Lee Xanthakos - we write up compliance reports and Duke, or the power plant that we receive power from, also writes up report and compliance is reported quarterly to FERC.

Lee went through a few examples with the group.

Lee began to explain why Saluda was used for reserves.

He noted that they don't always just use Saluda may use Fairfield too, but Saluda will give you power the fastest. If you don't have hydro you have to have other options like turbine farms that are loud, expensive, and only 50 percent reliable, so you have to have reserves for your reserves.

Saluda is the reliable solution for keeping the system online.

Parkin Hunter asked, "Have you ever had the instance of drought, and the lake is down and you cannot generate?"

Lee replied, "No because even with an hour of generation, it won't affect level of lake very much."

Randy Mahan noted that one of the reasons why SCE&G needs to have 345' in the license is because SCE&G needs to be able to bring it down to 345' for maintenance of the dam.

Dick Christie asked if you could re-agree with VACAR that you would only carry 100 MW in reserves instead of 200.

Lee replied that, "We need VACAR as much as they need us, they may find another partner if they are unhappy with us, it is a load/generation ratio, as we grow; the collective ratio grows as well."

Gina Kirkland asked, "I know SRS is not available, but is there actually thought to use it?"

Randy Mahan responded that there are thoughts toward that, but that is still not solving the contingency reserve issue that you need Saluda for.

George Duke noted that he had a completely different perspective about Saluda coming into this meeting than he has after hearing the presentation. He noted that he had always assumed that SCE&G used Saluda to supply low cost power that they in turn sold high, which is absolutely not the case.

Lee concluded the presentation and the group then began to discuss the mission statement.

Randy Mahan pointed out that there were a lot of ways to develop mission statement, they could be worked on separately and melded together or they could brainstorm as a group.

Patrick Moore noted that many stakeholders have addressed the formation of a process group.

Randy Mahan replied, "I don't think that is necessary, if there is a procedural issue that needs to be resolved, we will create an ad hoc group. But I believe that creating one now is a solution waiting for a problem."

Joy Downs noted that LMA does not necessarily see that there is a need for a procedural group but there are some questions that LMA has.

Steve Bell noted that if some individuals feel that they need to meet aside, informally, they could do so to develop recommendations.

Randy Mahan replied, "I think we tried to make it clear that if you have recommendations you can submit them, however it is not a democratic process, this is a cooperative process."

Gina Kirkland noted that not everyone is going to be completely happy, but you have to come to a consensus as a group.

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From: Alison Guth
Sent: Friday, February 17, 2006 5:11 PM
To: Alan Stuart; Alison Guth; 'bill_hulslander@nps.gov'; 'cheetahtrk@yahoo.com'; 'dlandis1@sc.rr.com'; 'dchristie@infoave.net'; 'kayakduke@bellsouth.net'; 'KIRKLAGL@dhec.sc.gov'; 'Bkawasi@sc.rr.com'; 'Jeff_Duncan@NPS.gov'; 'Elymay2@aol.com'; 'dvklmass@bellsouth.net'; 'lmichalec@aol.com'; 'parkin@parkinhunter.com'; 'PatrickM@scccl.org'; 'crafton@usit.net'; 'rjernigan@scfbins.com'; 'bellsteve9339@bellsouth.net'; 'suzrhodes@juno.com'; 'truple@sc.rr.com'; 'Stonecypher@istreamconsulting.com'; 'gjobsis@americanrivers.org'; 'rammarell@scana.com'; BARGENTIERI@scana.com; 'msummer@scana.com'; RMAHAN@scana.com; Kristina Massey; 'mark_leao@fws.gov'; 'amanda_hill@fws.gov'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'mwaddell@esri.sc.edu'; 'r1shealy@aol.com'; 'tbebber@scprt.com'; Bret Hoffman; Mike Schimpff
Subject: Final Operations Meeting Notes

Hello Operations Group

Attached is the Final set of meeting notes from the Dec. 6th Meeting. The draft Jan 26th meeting notes should be out next week. Have a wonderful weekend. Alison

2005-12-06 Final Meeting Notes...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
December 6, 2005

Final 2-17 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Amanda Hill, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers
Jeff Duncan, NPS
Michael Waddell, TU
Bill Cutler, Lake Watch

DATE: December 6, 2005

ACTION ITEMS:

- Hydrologic Model Presentation
  SCE&G\Kleinschmidt Associates

HOMEWORK ITEMS:

- Think about what information needs to be presented in this group for educational purposes

AGENDA TOPICS FOR NEXT MEETING:

- Presentation on Hydrologic Models
- Discussion

DATE OF NEXT MEETING: **January 26, 2006 at 9:30 a.m.**

Located at the Saluda Shoals Park Rivers Center

DISCUSSION

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan opened the meeting and introduced Bill Argentieri as the speaker for the presentation on the "Nuts and Bolts of Saluda Operations." Bill began his presentation, and several questions about definitions came up during the course of the discussion. After a cross-section of a general hydropower plant was shown, several questions arose about the penstocks and the towers. It was noted that the penstocks are the pipes that let the water from the lake flow through the turbines, and the penstocks are inspected on a periodic basis. A question arose on whether or not the towers require maintenance and Bill replied that most of the maintenance on the towers has to do with the mechanical components such as the gates.

Mike Waddell asked how Saluda Hydro efficiency is affected by lake levels. Kristina replied that as the Lake drops the efficiency drops as well. There was some discussion on the water intake from the towers and the restrictions associated with Unit 5, including those restrictions caused by the congregation of blueback herring around the Unit 5 tower during certain times of the year. It was noted that SCE&G has hydro-acoustic equipment that monitor the presence of fish in the vicinity of the intake, including the blueback herring.

Bill began to give the group some background on the Project and some of the specifics about the plant were noted. He pointed out that first four units can generate 3000 cfs of water flow per unit at full load and Unit 5, being about twice the size, can generate 6000 cfs at full load. George Duke asked how old the generators were, to which Bill replied that they are 75 years old. From a maintenance standpoint, Mike Summer added that a few of the units have been rewound.

Discussions then turned to turbine venting. Patrick Moore asked if the hub baffles allowed all of the units to be equally effective at venting. Alan Stuart explained that all of the units vent at different efficiencies, with a major contributor to this being the condition of the seals on the units.

The group briefly discussed the maintenance on the units. It was noted that the units are frequently inspected and electrical testing is performed routinely. When asked if there was a life span on the units, Mike Summer noted that it is more cost effective to maintain a unit over a period of time as opposed to replacing the whole unit. Kristina Massey added that units 1-4 had major overhauls in the late 70's to early 80's. Bill noted that SCE&G is looking at the potential for upgrading the units

and KA is doing a study to provide SCE&G with some options for upgrading. Bill added that this study takes into account many issues, including the environmental issues.

Bill began to discuss Unit 5 and noted that because it does not have an isolation valve on the unit itself, the gate has to be closed at the tower. He added that Unit 5 was "bought off of the shelf" in the late 60's, as opposed to being specifically designed for the location, water flows, head, etc. where it is. It went into operation in '71.

The group then began to discuss the emergency spillway. Bill explained that in the event that the dam were in danger of being overtopped, the spillway gates could be opened for the emergency release of water, hence the name "emergency spillway." This is the only operational function of the emergency spillway. Bill pointed out that the spillway channel is not the original Saluda River channel but rather a manmade channel. Amanda Hill asked if the natural streambed was where the powerhouse is now. Bill replied that it was between the towers and the spillway. There was some discussion on the Probable Maximum Flood and also on the black start capabilities of the plant. Bill noted that if there were a blackout, Saluda was one of the few plants on SCE&G's system that could start from scratch. The group also briefly discussed the Flow Forecasting Model.

Mike Waddell asked what SCE&G uses for reserves if they were running Saluda due to rainfall. Bill replied that they either use another plant, such as the Monticello Pumped Storage Project, or they buy power from another system. One group member inquired as to whether SCE&G anticipated Lake Murray being required to operate as a flood control lake and how that might impact inundation at the Congaree National Park. Randy noted that he believed it was imprudent for anyone to count on Saluda for flood control when 2/3 of the flow into the Congaree comes from the Broad rather than the Saluda.

The group began to discuss the operational warning sirens on the LSR, as well as the sirens that are activated in the event of a dam failure. Bill noted that emergency action brochures that explain what people should do should they be alerted to a potential dam failure are mailed out to those individuals who reside in the zip code areas below the dam and drills are preformed on a regular basis.

Discussions began to center around the maintenance work on the dam and the upcoming placement of rip-rap on the upstream face of the dam. Bill noted that they were waiting until the north bound lanes were complete so that traffic could be re-routed, otherwise the existing south bound lane section of Hwy 6 would have to be shut down.

Bill concluded his presentation and the group began to discuss the mission statement. It was agreed that the goal of the group would be to develop a hydrologic operations model.

The group began to discuss what they would like to see come out of a model. It was discussed that the model needs to be user friendly. There were several models that were mentioned, including Hec 5 and Oasis. Bill Hulslander noted that it was important to make sure the model was able to take inputs or outputs from other RCGs. Bud Badr explained his view that the model would actually be a water allocation model that would take into account how much water was in the Lake, how much water was coming into the Lake and how much water was flowing out of the Lake. He noted that it would look at what the interests would be upstream, as well as downstream interests and SCE&G's interests. Bud continued to explain that each interest would be converted into a number value and while the system is being run it will show how many times a certain interest is infringed upon during different scenarios. He noted that the model can be worked to show how many interests "violations" will occur over a span of time. Bud mentioned that everyone is given equal consideration in the model.

Patrick Moore noted that a few years ago American Rivers and the National Heritage Institute started to model the entire Santee Basin. He added that this model would be ready in the next few months. Bud noted that it was a very good model but that it did not substitute for the model that was needed here.

Parkin Hunter asked if the model would be stochastic. Bud replied that it would be deterministic because it is going to use actual measurements and limitations from the Lake.

In a further explanation of his expectations for the model, Bud noted that the first step would be to get the inflows for an extended period of time. He then explained that you need such data as daily rainfall and the daily capacity to develop the baseline. He pointed out that the modeler has to establish relationships between certain demands and interests and lake level elevations. Bud added that evaporation also has to be considered. With respect to downstream interests, he noted that water quality can be reflected in terms of a certain flow or height. He added that the same idea applies to fisheries and navigation. He explained that the modeler will run the scenario and the baseflow for the last fifty years or so. Bud noted that once the model has been built, it will be a tool to mimic the real system, and can be calibrated for high flow, average flow and low flow.

There was some discussion on how floods and droughts would be incorporated into the model. It was noted that the model was going to be calibrated to the last 30 years of climate data. Bud noted that in 2002 there was a very extreme drought and added that he did not believe that extreme drought events, such as that one, should drive the allocations of the model. He pointed out that that event should probably be excluded and put under a low flow protocol. George Duke inquired that if the model was going to exclude the extreme drought cases, then shouldn't it exclude the extreme flooding cases as well. Bud replied that problems arose when there was not enough water in the

Lake, such as in drought situations, and too much water was not a worry in regards to water allocations.

The group decided that at the next meeting SCE&G would give a presentation on potential models that could be used for Lake Murray and that also could interface into SCE&G's computer system. George Duke suggested that it may be good to show the presentation to the other groups as well so that they will know what is needed from them. Alan agreed.

Bud noted that it would be beneficial to the state agencies to have access to the model and noted that they could sign a contract stating that they would not share it with any outside groups.

Through an interactive discussion the group gave suggestions as to what they would like the model outputs to be; they are listed below:

Outputs of the model
Lake Levels
LSR Flows
Inflows
Generation
Lake Capacity, storage
Frequency, magnitude and duration of demand satisfaction
Graphic Ability
Interactive Model Front

The group then agreed on the mission statement, which is listed below.

> "The Mission of the Operations Resource Conservation Group (ORCG) is to oversee the development of a robust hydrologic model for the Saluda Project which will establish a baseline of current hydrologic, hydraulic, and operational conditions, and aid in analyzing and understanding the potential upstream and downstream effects of potential changes to project operations, in support of the missions and goals of all other Saluda Hydroelectric Relicensing RCGs. The objective is to fairly consider those impacts, to include low-flow conditions as a part of developing consensus-based, operations focused recommendations for the FERC license application. Model results are to be presented in readily understandable terms and format. A key measure of success in achieving the mission and goals will be a published Protection, Mitigation, and Enhancement (PM&E) Agreement."

The group decided that the next meeting would occur on January 26 at 9:30. The training center was booked for that date but after the meeting Alison was able to secure a room at the Saluda Shoals Park Rivers Center for the meeting location.

Stacia Hoover

From: Alison Guth
Sent: Thursday, December 01, 2005 9:21 AM
To: 'Parkin Hunter'
Subject: FW: Draft Operations Meeting Notes

-----Original Message-----
From: Alison Guth
Sent: Wednesday, November 30, 2005 10:11 AM
To: Alan Stuart; 'AMMARELL, RAYMOND R'; 'bargentieri@scana.com'; 'pxanthakos@scana.com'; 'Gina Kirkland'; 'msummer@scana.com'; 'sbwofford@scana.com'; 'rmahan@scana.com'; Kristina Massey; 'bellsteve9339@bellsouth.net'; 'mark_Leao@fws.gov'; 'Elymay2@aol.com'; 'truple@sc.rr.com'; 'Dick Christie'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'kayakduke@bellsouth.net'; 'bill_hulslander@nps.gov'; 'PatrickM@scccl.org'
Subject: Draft Operations Meeting Notes

Good Morning,

Attached is a copy of the draft November 1st Operations RCG Meeting Notes for your review. Please have comments back to me by December 15th for revisions. You may also present any comments you have on the meeting notes to me before or after the Operations RCG next Tuesday. Thanks for your time.

Regards,
Alison

November 1st Operations Notes ...

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
P: (803) 822-3177
F: (803) 822-3183

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
November 1, 2005

Draft 11-30 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Lee Xanthakos, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Sally Wofford, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Mark Leao, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Dick Christie, SCDNR
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
Bill Marshall, LSSRAC
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers

DATE: November 1, 2005

ACTION ITEMS:

- Draft Mission Statement:
  Randy Mahan

HOMEWORK ITEMS:

- Review ICD and Study Requests
- Think about what information needs to be presented in this group for educational purposes

AGENDA TOPICS FOR NEXT MEETING:

- Develop mission statement
- Discussion on the content of a Model
- Review of stakeholder interests
- Presentation on Saluda
- Review of requested studies and a determination of what information already exists

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
November 1, 2005

Draft 11-30 ACG

DATE OF NEXT MEETING: **December 6, 2005 at 9:30 a.m.**
Located at the Lake Murray Training Center

INTRODUCTIONS AND PURPOSE

Alan Stuart opened the meeting and everyone introduced themselves.

He introduced Lee Xanthakos as the presentation speaker and noted that the purpose of the RCG would be to try to identify resource specific issues. Alan noted that because SCE&G was using the TLP it would be a cooperative process. He mentioned that the difference between cooperative and collaborative had been a topic of confusion.

DISCUSSION

Lee began his presentation on how and why Saluda Hydro operates the way it does.

He noted that he manages the system control room in the Palmetto center downtown.

Lee began to discuss the grid and noted that it was a constant balancing act and they had to work together with other utilities. He mentioned that what SCE&G does is very important to other power companies and visa versa. Lee explained that an example of the grid was the large towers that you see crossing the highway. He explained that electricity travels at the speed of light and noted that if you have a "hiccup" in power anywhere in the country, SCE&G feels it.

Lee presented a map representing the NERC (North American Electric Reliability Council) and noted that each company connects to one another which, in turn, provides a balance of authority.

Lee showed that SCE&G was connected to 5 other control areas.

Bud Badr asked: "How are you connected".

Lee replied: "Our plants are connected directly to their plant by lines."

Lee began to explain how the grid works. He noted that when customers turn on their appliances, and a demand surfaces, it is important for SCE&G to supply the power. He noted that there were three ways to supply power:

- Fossil fuel plants
- Nuclear power plants
- Hydro – noted that there is Fairfield pump storage, Saluda, and a few run of the river plants such as Parr and Neil Shoals

George Duke asked what the capacity of Fairfield was.

Lee explained that it was 560 MW. Lee began to explain the meaning of peak demand. He noted that in the summer the peak is late in the day and in the winter the peak is in the morning. In the summer you pump in the early morning. In the winter you pump at noon, although it varies from day to day.

George asked if this depended on weather cycles and Lee replied: "Very much, if there is flooding we cannot run Fairfield." He noted that it was a license requirement that the river cannot be over 40,000 cfs.

Lee continued to discuss balancing the grid and noted that balance means that there is enough electricity flowing from the generators to meet the Customer's demand. He noted that balance was measured in real time. He pointed out that if SCE&G is over-generating they will call a plant and tell them to cut back and visa versa. He noted that there was a certain order in which plants were taken off and online.

George duke asked: "When you are over generating where does it go?"

Lee explained that in a situation where demand is 4000 and generation is 4000 MW SCE&G is balanced and there is no energy is flowing across the lines. If demand is greater than generation, for example they did not plan well that morning or a plant went offline, SCE&G will take in electricity from neighboring utilities.

Lee noted that they have a meter called "inadvertent" and they try to keep it as close to zero as possible. He noted that if they see they have a negative number of inadvertent they will pump more on the grid…to bring it back to zero. He pointed out that it was called "payback in kind". He noted that if you had everyone putting out or taking in you have a problem.

Lee noted that an ACE stood for Area of Control Error. He noted that a lack of balance causes flow between control areas.

George Duke asked: "When you plan do you plan at some percent capacity.

Lee Xanthakos replied: "If a plant is online we get a report on dependable capability, and we run at that number. If you have a problem then you have contingency reserves. And Saluda is an important reserve."

Lee continued to explain that not all power plants are the same. Nuclear plants are on all the time, if it trips it comes on at 1MW a min, it would take an hour for it to get to 60MW. Natural gas is the same way because it needs to warm up. Lee mentioned that Parr can come on quickly but is not very reliable. Lee explained that another option was to buy power.

Lee noted that the energy from Saluda stays on the grid. He explained that Saluda stays offline until an emergency, In order to be considered reserves it has to be offline and ready. During unbalanced short periods of time other systems supply deficiency in generations.

Steve Bell asked, "Are TVA and Core lakes tied to you?"

Lee replied, "TVA and core lakes are not directly connected to us but are connected to SEPA SOCO etc, our VACAR partners."

Lee explained that imbalances in the system are caused by such things like power plants breaking down, fuel problems, power line problems etc. He noted that SCE&G could return balance by increasing generation or reducing demand by approved programs.

Reducing demand could include a load curtailment program, can choose a plan depending on the scenario.

Scenario 1 – Tomorrow is going to be cold and a large number of plants are offline, SCE&G would do public appeals through the media, large industrial customers will come offline that SCE&G has contracts with to do so.
Scenario 2 – The grid is balanced, but a nuclear station comes offline, He noted that then there is a voltage reduction.

Joy Downs asked, "What if we didn't have Saluda, what would we do."

Lee responded that there were several ways to do this…they could load up all the plants until a plant tripped. They could find alternate generation which would require them to build some other sort of quick start plant.

Gina Kirkland pointed out that hydro was one of the cleanest powers you could have in terms of what is good for the environment.

Lee began to discuss the rules that they operate by. He pointed out that it could be broken down into the NERC, the SERC and then finally VACAR. Lee continued to discuss the grid rules as presented in the presentation. He noted in order to avoid carrying 1000 MW in reserve, which is what they would have to do to stay in compliance with BAL-002-0, which is their most severe single contingency, they have formed a reserve sharing group meaning they are going to carry 200 MW.

He pointed out that just because Saluda is running doesn't mean that SCE&G directly needs the power; it could mean another member of their reserve sharing group had an outage. He noted that for their problems they usually call Duke because they have hydro and that is the most reliable.

He noted that in the VACAR contract, if they have to call on another company for reserves it is the price is the cost of the power +10%.

Joy Downs – "How can you be sure that they actually have an emergency and they are not just buying the power off of the grid."

Lee Xanthakos - we write up compliance reports and Duke, or the power plant that we receive power from, also writes up report and compliance is reported quarterly to FERC.

Lee went through a few examples with the group.

Lee began to explain why Saluda was used for reserves.

He noted that they don't always just use Saluda may use Fairfield too, but Saluda will give you power the fastest. If you don't have hydro you have to have other options like turbine farms that are loud, expensive, and only 50 percent reliable, so you have to have reserves for your reserves.

Saluda is the reliable solution for keeping the system online.

Parkin Hunter asked, "Have you ever had the instance of drought, and the lake is down and you cannot generate?"

Lee replied, "No because even with an hour of generation, it won't affect level of lake very much."

Randy Mahan noted that one of the reasons why SCE&G needs to have 345' in the license is because SCE&G needs to be able to bring it down to 345' for maintenance of the dam.

Dick Christie asked if you could re-agree with VACAR that you would only carry 100 MW in reserves instead of 200.

Lee replied that, "We need VACAR as much as they need us, they may find another partner if they are unhappy with us, it is a load/generation ratio, as we grow; the collective ratio grows as well."

Gina Kirkland asked, "I know SRS is not available, but is there actually thought to use it?"

Randy Mahan responded that there are thoughts toward that, but that is still not solving the contingency reserve issue that you need Saluda for.

George Duke noted that he had a completely different perspective about Saluda coming into this meeting than he has after hearing the presentation. He noted that he had always assumed that SCE&G used Saluda to supply low cost power that they in turn sold high, which is absolutely not the case.

Lee concluded the presentation and the group then began to discuss the mission statement.

Randy Mahan pointed out that there were a lot of ways to develop mission statement, they could be worked on separately and melded together or they could brainstorm as a group.

Patrick Moore noted that many stakeholders have addressed the formation of a process group.

Randy Mahan replied, "I don't think that is necessary, if there is a procedural issue that needs to be resolved, we will create an ad hoc group. But I believe that creating one now is a solution waiting for a problem."

Joy Downs noted that LMA does not necessarily see that there is a need for a procedural group but there are some questions that LMA has.

Steve Bell noted that if some individuals feel that they need to meet aside, informally, they could do so to develop recommendations.

Randy Mahan replied, "I think we tried to make it clear that if you have recommendations you can submit them, however it is not a democratic process, this is a cooperative process."

Gina Kirkland noted that not everyone is going to be completely happy, but you have to come to a consensus as a group.

Randy Mahan noted that SCE&G has a responsibility to take a recommendation and try to achieve consensus on a topic. He also noted that anyone can submit comments to the FERC on their own, as well.

Dick Christie pointed out that consensus is a decision that everyone can live with. It may benefit one individual more than another but it is a decision that most people can live with.

Gina Kirkland added that there is always someone who is not happy and cannot live with it, there are extremes that are unhappy but you can usually get consensus from "almost everyone".

Steve Bell asked, "What happens if the group agreed, for example, that the lake levels should be a certain height."

Randy replied that a consensus guides what SCE&G puts in the application packet and in turn goes to the FERC. If a consensus is reached and SCE&G disagrees, then SCE&G states that they disagree and why they do so, then the FERC will decide the outcome. He noted that individuals also have the option of filing a comment on this separately.

Alan noted that if everyone came to an agreement that a settlement agreement would be the end result.

Dick Christie noted that as far as communication between the groups goes, in other processes they have combined meetings and issues when facilitators decided to do so.

Alan Stuart noted that if this presents itself, they may see the need to combine a meeting.

Bud Badr noted that he believed the function of an Operations RCG would be to get with the other RCGs, take what everyone wants, balance input and needs, and develop a model. Bud continued to note that he has hired 2 more individuals to work primarily with the FERC relicensing issues and will be able to help SCE&G when they need something from DNR.

Alan began to discuss the issue of the "Parking Lot" as presented in the operating procedures. He noted that from a few comments that he has read that he believes there is a misunderstanding about the "Parking Lot". He noted that the parking lot is used for items that are irrelevant to the topic at hand and disrupt the flow of the agenda. He noted that that particular item would then be placed in the parking lot to be discussed at the end of the meeting or placed on the next meetings agenda.

Randy Mahan then discussed the evolution of an issue. He gave Recreational Flows as an example and noted that you need to first decide what you need to know in order to discuss whether

recreational flows are going to occur. Then you take the information and decide whether or not and how to address the issues. Then you decide what info is needed to address the issue, and what you need to know in order to make a reasonable recommendation.

Bud Badr pointed out that you need to make sure you support your issue.

Randy continued to note that they want decisions to be scientifically driven. He also noted that disagreement may arise on whether or not a study needs to be done because there may already be information available. It was also noted that some studies may be combined in order to answer as many questions as possible with one study.

On the topic of a mission statement, Gina Kirkland noted that she thought that a scope of the group needed to be better defined. She noted that she felt that a group could potentially get bogged down with issues that belong in other groups. She pointed out that maybe KA or SCE&G could offer a draft starting point and let the group put meat to it.

The group decided that SCE&G would develop a "strawman" before the next meeting and then discuss it from there.

Alan noted that a homework item would be to take the study requests, read through them, and make recommendations from there.

Randy noted that the long, in-depth studies need to be flushed out first, as they will take more time to accomplish.

Bill Hulslander asked, "Who will conduct the studies and who will decide who will conduct the studies."

Randy replied that the RCG will develop the scope and the TWC will determine the best way to conduct a study.

Alan then brought up the subject of the media; He noted that there was a rule in the operating procedures that a person who is an active member of the media cannot be an active member of an RCG. He noted that there were some individuals who were contributing writers to various newspapers and if there were problems where information came up in the media, then it will be dealt with. He noted that people need to be able to express themselves without being afraid that what they say will be written about. He noted that if you want to speak to the media afterwards, please do not say that you represent the RCG. However, you may represent your own agency or NGO.

Steve Bell asked if they could have closed meetings.

Randy replied that nothing should arise that would warrant a closed meeting.

Alan noted that they would be taking the operating procedures and revising them per comments submitted.

The group began to discuss homework items. Alan noted that one item for the group to think about would be what sort of presentation or information needed to be presented to the group.

Dick Christie noted that they needed to give thought to the product they would like from a meeting. He noted that different needs could arise and the group should try to pin them down. He continued to note that products are items needed to address in the model, low inflow protocol, operations protocol. He noted that he thought that they needed to make a decision on how recommendations were used.

The group began to discuss the use of the hydraulic model and Bud Badr noted that he would be able to help with this model and give information. He noted that this model would help to make value judgments.

Ron Ahle noted that he would like to see a presentation that discusses operational requirements, system requirements and such. It was also mentioned that information on the flow forecasting model and Probable Maximum Flood was needed.

Steve Bell asked about standard license articles and Alan noted that he would find these and send them to Steve.

The group closed by outlining the agenda for the next meeting.

In closing, Bill Marshall asked the group if a compromised time could be established, possibly halfway through the day in order to benefit those who are working.

Gina Kirkland responded that an occasional group meeting with all the resource groups in the evening would be okay.

Bill noted that his suggestion would be that they start around 3:00

The group noted that his was a difficult issue. It was discussed that an occasional evening meeting may be okay, however if they started at 3:00 in the afternoon the meeting may last until late at night.

Dick Christie noted that in his experience there will be a critical mass of people who are essential to the meeting. He noted that he doesn't mind going from around 1:00 to 7:00 if those individuals who you would be meeting later for could come every time.

Alan Stuart noted that it may be best that Bill Marshall meet separately with those individuals who cannot attend and keep them up to speed. He noted that he plans to have updates at quarterly Public Meetings.

Bill Argentieri asked if it would be beneficial to start at 1:00 in the afternoon.

Gina Kirkland responded that it would not be beneficial if they wanted to get through all of the agenda items. She noted that if the group is going to cover a lot of stuff and you are resource limited then the group needs to try to get as much accomplished at one meeting as possible.

It was also noted that if the meeting was started later in the afternoon, those traveling from out of town would have to drive back late as well.

The group concluded to keep the next meeting at the 9:30 schedule.

Kacie Jensen

From: John Davis [johned44@earthlink.net]

Sent: Monday, September 19, 2005 11:57 AM

To: Alison Guth

Subject: Please Post MSC Comments

Dear Ms. Guth:
Upon checking the stakeholder comments page, I did not see Midlands Striper Club listed. We sent the attached letter via email at 4:23PM on the afternoon of August 15, 2005, stating our position on water quality in Lake Murray. Our intent in doing so was to officially register as a stakeholder in the upcoming Saluda Hydro Relicensing Process.
Please add our name and comments to the stakeholders comment page as soon as possible. We will be participating in the upcoming process and look forward to meeting and working with others, including SCE&G and your organization.
We thank you for your assistance.
Sincerely,
John E. Davis, VP, MSC

--- John Davis
--- johned44@earthlink.net
--- EarthLink: The #1 provider of the Real Internet.

August 15, 2005

Mr. James Landreth, Vice President, Fossils and Hydro Operation
SCANA
Columbia, SC

Dear Sir:

Midlands Striper Club, the largest striped bass fishing club in South Carolina and the oldest inland striper fishing club in the nation, is extremely concerned about the maintenance of adequate dissolved oxygen levels needed to sustain the Lake Murray striped bass fishery during late summer. For this reason, we unanimously oppose the use of turbine five to pull water from the 50'-55' depths at the Lake Murray Dam during months when daytime air temperatures approach or exceed 90 degrees. Such temperatures are usually reached between late June and early September.

Our club and its family members have worked diligently through the years to promote a healthy striped bass fishery in Murray. The most important element in maintaining such a fishery during the summer months is maintaining dissolved oxygen levels at the 50-55 foot level in the big pool surrounding and in front of the power turbines. Stripers from throughout the lake system stage at this level during mid to late summer, seeking a critical combination of adequate oxygen and cool temperatures. If this water is pumped through the turbines, there is no way to replace it, as water from up-lake is typically oxygen poor during summer.

In 1991 MSC members saw the disastrous effects of a hot summer and running turbine five -- massive die-offs of large stripers evident throughout the big pool. Since that time, with SCE&G's cooperation in not pulling from this level and the efforts of DNR and clubs like MSC, our striper fishery has prospered.

Murray is now the state's premier striper fishery, with more fishing hours devoted to stripers than any other species and more fishing hours devoted to stripers on Murray than any other SC lake. It has been estimated that the economic impact of the Murray striper fishery is in the neighborhood of $12 million annually.

The current die off of large striped bass over the past two weeks further illustrates the results of using turbine five at this time. It is MSC's fear that our striper has again been damaged and such damage is likely to occur annually, causing the ultimate collapse of this great fishery and the recreation and economic impact it brings to SC and the Midlands.

The citizens and anglers of South Carolina support the continued stocking and growth of striped bass in Lake Murray through their tax dollars, license fees and through their adherence to restricted daily size and creel limits. For SCE&G to fail to develop and act on a plan that will safeguard this fishery would be tantamount to wanton waste of these valuable resources. We urge SCE&G to find ways to eliminate the use of turbine five during July and August. We also strongly request that some type of oxygen injection

system be installed on the turbine intake towers for use at this critical 50'-55' level during summer.

Respectfully Submitted,
John E. Davis, Vice President and acting Conservation Chair, Midlands Striper Club
August 14, 2005
Midlands Striper Club

--- John Davis
--- johned44@earthlink.net
--- EarthLink: The #1 provider of the Real Internet.

Stacia Hoover

From: Alison Guth
Sent: Tuesday, May 24, 2005 1:13 PM
To: BARGENTIERI@scana.com; 'Hal Beard'; 'knowlesc@dhec.sc.gov'; 'gerritj@scccl.org'; 'Prescott Brownell'; 'dchristie@infoave.net'; 'bjmcmanus@jonesday.com'; 'Carlton D Wood'; RMAHAN@scana.com; 'rammarell@scana.com'; 'teppink@SCANA.com'; 'msummer@scana.com'; 'ssummer@scana.com'; 'Gina Kirkland'; Alan Stuart
Subject: Final Meeting notes from 3/21

Hello Folks,

Attached is the final copy of the meeting notes for the March 21 Saluda Hydro Operations meeting. Thanks to all of you for your comments and take care.

Sincerely,
Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
P: (803) 822-3177
F: (803) 822-3183

Water Quality Operation Report...

Saluda Hydro
Meeting Regarding the Preliminary Annual Report on Water Quality and Aeration Operations and Saluda Hydro Operation Guidelines

March 21, 2005

Attendees:

Gina Kirkland	SCDHEC	Ray Ammarell	SCE&G
Alan Stuart	Kleinschmidt	Randy Mahan	SCANA Services
Alison Guth	Kleinschmidt	Carlton Wood	USGS
Bill Argentieri	SCE&G	Brian McManus	Jones Day
Steve Summer	SCANA Services	Dick Christie	SCDNR
Mike Summer	SCE&G	Prescott Brownell	NOAA Fisheries
Tom Eppink	SCANA Services	Gerrit Jobsis	CCL/Am. Rivers
Sally Knowles	SCDHEC	Hal Beard	SCDNR
Richard Roos-Collins	NHI		

Action Items: Due Date:

- Prepare and distribute meeting notes from March 21 meeting
  Alison Guth *April 30, 2005*

- Incorporate revisions into the Annual Report on Water Quality and Aeration Operations and the 2005 Operation Guidelines
  Alan Stuart *April 4, 2005*

- Arrange for a tour of the operations facility at the Palmetto Building downtown, at the request of SCDHEC
  SCE&G and KA *June 2005*

- Acquire DO monitor testing criteria from Ted Cooney of USGS and distribute to SCDHEC
  Steve Summer *May 1, 2005*

- Send a schedule on hub baffle installation and the USGS monitoring plan to Gerrit Jobsis
  Alan Stuart *May 21, 2005*

Meeting Notes:

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan opened the meeting at approximately 9:25 and stated that the purpose of the meeting was to review the 2004 Aeration Report based on operation guidelines, as well as to prepare the 2005 Operation Report. Alan mentioned that Jim Ruane did the final

analyses on the Annual Water Quality and Aeration Operations Report, and although he was unable to attend this meeting today, that he could be contacted with questions.

Review of the Preliminary Annual Report on Water Quality and Aeration Operations:

The group began to discuss the Annual Water Quality and Aeration Report. Gerrit mentioned that on the second page of the report, first paragraph, it discusses SCE&G's reserve obligations, he asked where he could get a copy of the regional VACAR contract in order to gain a better understanding of what it says. Bill noted that it was his understanding that it was a public document, and can be found as an appendix to the Interconnection Agreement with other utilities. The group discussed VACAR member responsibilities and it was explained that SCE&G was a part of the southeastern system. It was noted that SCE&G had to prioritize their needs first and then the needs of the system. Dick asked SCE&G why they could not use a different hydro unit to provide reserve capacity other than Saluda Hydro. SCE&G explained that the only other operating system they have like Saluda Hydro is Fairfield and it is not available at all times. Bill continued to explain that if a coal fired plant trips off there needs to be a system capable of meeting that type of demand.

Richard noted that in the annual report, it might be conducive to better understanding to place background considerations into their own subsection. SCE&G noted that this could be done very easily. He also asked, in reference to section 1.1 of the report, for what % of the time was the site D.O standard maintained. Gerrit noted that there were 4 occasions on which data indicates that the DO standard was not met, one of which was a 24 hour period were there appears to be low/no DO.

Gina questioned whether or not the USGS data used was entirely accurate and there was no fouling. SCE&G noted that they used USGS provisional data in their analyses. To which Carlton noted that provisional data was not QAQC'd by USGS. He mentioned that the meters were checked every two weeks; Steve added that he would occasionally find fouling and would consequently call USGS to inform them of his findings. Due to these fouling issues, Carlton informed the group that the Hydrolab meters were changed in November to YSI meters which do not require a stirrer, so he expects improvements in data accuracy. He continued to note that they are tested by the Hydrologic Instrumentation Facility (HIF). Gina then inquired as to if she could get the testing criteria. It was decided that Ted Cooney would be the best individual from which to get the criteria and Steve Summer mentioned that he would work on acquiring this data.

The group continued to discuss the accuracy of the meters, SCE&G noted that they go out frequently and spot check the DO, especially during the "DO crunch" period. When Carlton was there, they noted that they would compare their data with his. Carlton added that each unit typically had a variability of 0.2 mg/l in either direction. He continued to

note that this variability was increased when comparing two units. Both Alan and Steve noted that they have on different occasions observed significant differences between the readings of two different meters.

Carlton continued to state that USGS processed the DO data every 2 weeks, in an effort to turn provisional data into nearly-final data, applying corrections to the information on the internet. Subsequently, he noted that the real-time data may look different than data from two weeks before because it has been corrected. Sally questioned Carlton as to whether he typically saw data vary or if he excluded data. Carlton replied that they are not allowed to change individual unit values; however, they can delete them if there are significant departures from what the data would be. They can then apply the corrections to the whole period or part of the period.

The group began to confer on other options for obtaining the most accurate reading of DO. Carlton noted that since the DO typically varies across the stream, optimal data would be best achieved by sampling from the center of the river, however due to recreation constraints, USGS was typically not allowed to place a meter in such a location. He pointed out that monitoring could be enhanced if the platform could be lengthened to extend the gage further out into the channel.

Discussions turned to the lower Saluda River fishery. Hal noted in reference to the trout fishery, that comparatively speaking, the size and abundance of fish caught during last year's sampling efforts has decreased. However, he continued to note that it was not fair to say that the populations were decimated, decreased numbers could be due to anglers and factors other than water quality.

Tom pointed out, in reference to water quality, the Project was not the sole source for DO impact, what is coming into the Lake has a great impact on the water quality. Sally replied that SCDHEC does not expect the Project to bring the water quality of the river up if the river is naturally low. Gina noted that the release of water from the dam is not a natural phenomenon, releasing cold but low DO waters. She continued to state that subsequently, she believes SCE&G does have the responsibility to meet the standard. Sally suggested that perhaps SCE&G and SCDHEC should jointly develop an assessment methodology for determining standards attainment at hydro projects. The methodology should recognize that one excursion for a short duration does not necessarily indicate non compliance. SCE&G replied that they were willing to do whatever was reasonable to help the DO as long as they could maintain the Project for reserve capacity. However, they continued to state that they believe that water quality issues should also be addressed at their upstream sources, especially the Bush River area. Gina stated that DHEC will address point sources, but the buffer areas around the lake are SCE&G's responsibility. Randy replied that SCE&G only owned 1/3 of the lake, however have significantly promoted best management practices around the lake.

Saluda Hydro
Meeting Regarding the Preliminary Annual Report on Water Quality and Aeration Operations and Saluda Hydro Operation Guidelines

March 21, 2005

Richard Roos-Collins mentioned that he would like to see the figures and tables in the report summarized in terms of exceedences and compliances. Steve replied that it will be done with the updated QAQC'd USGS data. Alan noted that in talking with Jim Ruane, Jim thought the performance was better at the flow outputs and the look up tables are representative of a conservative estimate.

Gerrit questioned as to why there was a need to release large flows for a short amount of time as opposed to lower flows over a longer period of time. SCE&G replied that many times they have very short notice as to how much the reservoirs above Lake Murray will release. Consequently, they must release what is necessary in the amount of time that they are given.

The group continued to discuss goals for 2005. Gerrit noted that he would like to see measures enacted that help to avoid extended periods of time with low DO and have an extended outlook to make estimates for more moderate flows. Randy noted that they would look into doing that however it was hard to predict all circumstances.

Richard noted that in sections 3.1 through 3.3 of the Preliminary annual report that he would like to see a brief summary of scale of the exceedance and how many days the minimum DO occurred, placing more emphasis on the frequency and the duration of the exceedances.

Sally inquired as to where the operation center was for the dam. Randy replied that it was in the Palmetto Building downtown. Sally mentioned that she would like a tour of that facility, and the others agreed.

The group then began to discuss hub baffles and the time frame for their installation. Mike Summer noted that there were a lot of things to consider when choosing an optimal time for installation, such as safety issues and the renting of plugs. Gerrit noted that it may be beneficial to reference the subsequent water quality study plan in the agreement for 2005. Gina mentioned that she would also like to see a growth study performed after the hub baffles were installed and running for a year. Gerrit requested a schedule on hub baffle installation as well as a schedule on the USGS monitoring plan.

Review of the Guidelines for Operation of the Saluda Project for Dissolved Oxygen Management in 2005:

After a short break for lunch, the group re-convened to discuss the 2005 Guidelines for Operation. Alan noted that as discussed previously he took out all of the references to refilling activities and added a point to conduct the monthly training of operators. Gerrit noted that it would be helpful if maximum flow training was incorporated in order to help promote more gradual flows to better meet water quality standards. Sally requested that hub baffle installation be added in as an action into the plan.

Saluda Hydro
Meeting Regarding the Preliminary Annual Report on Water Quality and Aeration Operations and Saluda Hydro Operation Guidelines

March 21, 2005

Mike began to explain how SCE&G was working through Kleinschmidt Associates to acquire the help of a consultant to work on installing the hub baffles which take several days to install. Gerrit mentioned that he would like some kind of commitment to get this done on SCE&G's part. Bill noted that SCE&G was trying to get Jim Carter to come in and work with the hub baffles. Sally requested that SCE&G send out a progress report on the hub baffle installation by June 1, 2005. Gerrit requested that if the installation of hub baffles is not possible then a change in operations needs to be considered. He also requested that new testing be performed and new look up tables be compiled after the hub baffles have been installed.

Richard requested that monthly technical meetings be arranged on the application of the look-up tables. The group concluded that these could be arranged on an as-needed basis. Sally noted that it would be helpful if the weekly operation reports included an explanation of any excursions that may have occurred, and that this item was recorded as an amendment to the plan on pg. 2 of the 2005 plan.

The group began discussing what flows could be expected during 2005. Steve noted that they could expect a minimum flow greater than 400 cfs, close to 500 cfs. While conversing on the 2005 plan, Gerrit requested that SCE&G track change the edits in the appendix of the 2005 plan. Bill concluded noting that the final revised draft needs to be out to the FERC by June 1, 2005 and the draft with new revisions would be back out by April 4, 2005.

The meeting adjourned at approximately 1:45.

Stacia Hoover

From: Alison Guth
Sent: Monday, November 13, 2006 4:51 PM
To: Winward point Yacht Club ; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Amy Bennett; Andy Miller; Bertina Floyd; Bill Argentieri; Bill Brebner ; Bill East; Bill Green (BGreen@smeinc.com); Bill Hulslander; Bill Marshall; Bill Mathias; Bob Olsen; Bob Seibels (bseibels@yahoo.com); Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Duncan (duncane@mrd.dnr.state.sc.us); Edward Schnepel; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; Joel Huggins ; John and Rob Altenberg; John Davis (johned44@bellsouth.net); John Frick (jsfrick@mindspring.com); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Styer ; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Linda Lester ; Linda Schneider ; Malcolm Leaphart; Marianne Zajac; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Phil Hamby ; Prescott Brownell; Randal Shealy; Randy Mahan; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener (SKEENER@sc.rr.com); Robert Lavisky; Roger Hovis ; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sandra Reinhardt; Sean Norris; Shane Boring; Skeet Mills ; Steve Bell; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Theresa Thom; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Valerie Marcil; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Wenonah Haire; Mike Schimpff
Subject: Final Meeting Notes - All RCG's Meeting

Hello All,

Attached is the final set of meeting notes from the October 12th All RCG's Meetings. Thanks, Alison

2006-10-12 final Meeting Minut...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
All RCGs Operations Meeting

Saluda Shoals Park
October 12, 2006

Final acg 11-13-06

ATTENDEES:

Alison Guth, Kleinschmidt Associates
Alan Stuart, Kleinschmidt Associates
David Price, LM Power Squadron
Kim Westbury, Saluda County
Bret Hoffman, Kleinschmidt Associates
Ronald Scott, Lexington County
Patrick Moore, CCL, AR
Ron Ahle, SCDNR
Kristina Massey, Kleinschmidt Associates
Bob Olson, NRE
Jenn O'Rourke, SCWF
Dick Christie, SCDNR
Jeff Duncan, NPS
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Bob Seibels, Riverbanks Zoo
Bill Argentieri, SCE&G
Karen Kustafik, CoC Parks & Rec
Bill Brebner, YCOA
Roy Parker, LMA
Steve Summer, SCANA Services
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Ray Ammarell, SCE&G
Shane Boring, Kleinschmidt Associates
Dave Anderson, Kleinschmidt Associates
Amy Bennett, SCDHEC
Jim Ruane, REMI
Trisha Priester, Lexington County
Andy Miller, SCDHEC
Reed Bull, Midlands Striper Club
Brandon Stutts, SCANA Services
Mike Schimpff, Kleinschmidt Associates
Tom Bowles, SCE&G
Richard Mikell, Adventure Carolina
Bob Perry, SCDNR
Theresa Thom, NPS
Ed Schnepel, LMA
Ed Diebold, Riverbanks Zoo
Jon Quebbeman, Kleinschmidt Associates
Mike Waddell, Saluda TU
Amanda Hill, USFWS
Kenneth Fox, LMA
Bob Keener, LMA & LMSCA
Bud Badr, SCDNR
Bob Keener, LMA

MEETING NOTES:

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan Stuart of Kleinschmidt Associates welcomed the group and noted that the purpose of this meeting was to introduce two items to the RCG members, a presentation on the research SCE&G has done on Alternative Energy Sources, and secondly to discuss the HEC-ResSim Operations Model. Alan noted that in order to aid in the understanding of hydrology when discussing the model, Dr. Bud Badr would also be providing the group with a hydrology 101 presentation. Subsequent to Alan's introduction, the following presentations were given (click below to view)

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
All RCGs Operations Meeting

Saluda Shoals Park
October 12, 2006

Final acg 11-13-06

Alternative Energy Source Presentation – *Carl Hoadley & Skip Smith SCE&G:* *http://www.saludahydrorelicense.com/documents/ALTERNATIVEGENERATION.pdf*

An Understanding Of Hydrology – *Dr. Bud Badr : Coming Soon*

Discussion On The HEC-ResSim Operations Model – *Mike Schmipff & Jon Quebbeman – Kleinschmidt Associates : http://www.saludahydrorelicense.com/documents/SaludaProject10-12a.pdf*

Following the presentation on Alternative Generation, the floor was opened up for questions. One individual asked how the reliability numbers presented in the presentation were calculated. Carl H. replied that in order to calculate those numbers, they looked at forced outage rates, routine maintenance, as well as industry numbers. Bill A. also explained that many of the equipment cost numbers come from recent numbers that the vendors supplied. The group also briefly discussed how future demands will be fulfilled. One individual asked if SCE&G has evaluated how Saluda may be used in the future. Steve S. replied that SCE&G is looking at fulfilling future capacity needs through a nuclear station. There was also brief discussion regarding the use of Saluda over the past year. Bill A. explained that last year SCE&G tried to keep the lake level up around 358' and because of this, they had to get rid of the rainwater that entered the system rapidly to avoid exceeding the normal high water level. Due to problems with some of the other units at Saluda, Unit 5 was run to expel the excess rainwater. Reed B. also asked if there was any way to look at how Saluda was used for reserve in the past in order to predict how Saluda may be used for reserve in the future. Randy M. noted that because of the unpredictable nature of reserve calls, it would be difficult to forecast how often they may be called upon for reserve in the future. Patrick Moore asked if the alternatives analysis had considered partial replacement of only 50 or 100 MW because the most problematic impacts occurred at high flows. Bill A. replied that the Code of Fed. Regulations only required the full replacement cost analysis and that no partial analysis had been done. Later in the meeting Patrick commented that the 34 million dollar relicensing cost cap was an internal, SCE&G figure and that it in no way limited what SCE&G would be required to spend to address project impacts. He cited a recent court of appeals case that stated FERC has no obligation to issue an economically viable license.

After a short break, Dr. Bud Badr gave a presentation on hydrology to the group. There were no questions following Dr. Badr's presentation.

The next presentation was given by Mike Schmipff and Jon Quebbeman on the HEC-ResSim model developed for Saluda. The presentation can be viewed from the link above. Mike S. explained that the HEC-ResSim model was used for Lake Murray and was incorporated with the HEC-Ras model for the lower Saluda River. The floor was open for questions throughout the presentation. Tony B. noted that in the last 16 years he doesn't believe there have been any major flood events, and asked if something was built into the model to account for this. Mike S. explained that this being a water

allocation model, he was not as concerned about the high flow times because water can be allocated for all the needs. He noted that the concern lies in the low flow times. Jeff D. asked if data from the Catawba Wateree model could be integrated into the Saluda model. Jon Q. noted that it was possible to add in other data to the model, however he noted that he did not believe it would be necessary or appropriate to add the Catawba data in.

The group began to discuss in a little more detail the constraints to be developed by the Resource Conservation Groups. Dave A. asked if the flows in the lower Saluda River can be calculated at the gage by the Zoo. Jon Q. replied that it could. Dave A. also asked if the model could predict what would happen when Saluda is used for reserve. Jon Q. explained that they were going to handle this by adding in, for example, 200 MW, 1 day a month, for 24 hours. Dave A. asked how the constraints will be obtained from the Resource Conservation Groups. Jon Q. noted that it depended on the RCGs time schedule, once an RCG makes a recommendation for the model, he could input the data. Ron A. added that he believed that instream flows would be the last input to the model. Mike S. and Jon Q. concluded their presentation and the group adjourned.

Stacia Hoover

From: Alison Guth
Sent: Thursday, May 11, 2006 3:50 PM
To: Alan Stuart; BARGENTIERI@scana.com; 'Bill Marshall'; 'Mike Waddell'; 'Patrick Moore'; 'bellsteve9339@bellsouth.net'; 'theresa_thom@nps.gov'; 'Jennifer O'Rourke'; 'Bigbillcutler@aol.com'; RMAHAN@scana.com
Subject: April 6th TWC meeting notes

Hello all,

Attached are the draft meeting notes from the April 6th Operations and Safety TWC meeting. Please have any comments back to me by May 24th for finalization. Thanks, Alison

2006-04-06 draft Meeting Minut...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS & SAFETY TWC

Saluda Shoals Park
April 6, 2006

5-11-06 draft acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Bill Argentieri, SCE&G
Bill Marshall, DNR, LSSRAC
Michael Waddell, TU
Patrick Moore, SCCCL, Am. Rivers
Steve Bell, Lake Watch
Theresa Thom, Congaree National Park
Jennifer O'Rourke, SC Wildlife Federation
Bill Cutler, Lake Watch, LM Homeowners Coalition

DATE: April 6, 2006

These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

DISCUSSION

After the April 6th Combined Safety and Recreation meeting, the TWC members began the technical meeting. Bill Argentieri opened the meeting by asking what info the group felt that it needed and he would check to see if that information was available. Patrick Moore noted that he would like to see information on the operation of Saluda from a wet year, a dry year, and a normal year. He also noted that it would be beneficial to obtain operations information from a normal, wet, and dry year from the time in which Saluda was used for peaking.

Steve Bell asked if weekly generation reports were available for all plants on SCE&G's system. Bill Argentieri replied that they were available for Saluda because they are being sent out as part of the settlement agreement. Steve further explained that they would like to see reports from the entire system in order to see if Saluda was run for reserve or for some other reason. Patrick further noted that he would like to see is Saluda truly was the last option for reserve. Mike Waddell explained that it was his interest to expand the range of options and to better grasp how the system operates.

The group began discussing what date ranges of information was needed. Mike Waddell suggested that the group begin by looking at information from January of 2005 to the following January, with the understanding that there may be more questions once the group is able to look at the information. Bill Argentieri explained that the generation reports alone would not explain why

other plants were or were not operated. The group began to go over options for deciphering why a particular plant was run. Mike Waddell suggested looking at Broad River flows in order to see how many times it was flowing over 40,000 cfs.

Steve Bell noted that his goal for the committee would be to have a specific report that was part of the record and that other groups could refer to. The group also requested a round table discussion with Lee Xanthakos to discuss in more detail how he uses Saluda as well as the other facilities.

Bill Marshall mentioned that he also would be interested in learning different scenarios for the use of Saluda and Fairfield and asked if that would be a part of what was brought to the table in an alternatives analysis. Bill Argentieri replied that it was not a part of the alternative analysis which would look at the alternatives for replacing Saluda all together.

The group continued to discuss the uses of Saluda and Fairfield. Patrick Moore requested to see information on rate ranges for the purchase of power. Alan noted that this information could not be disseminated in the presence of Lee Xanthakos according to FERC guidelines.

Steve Bell noted that he would also like to see information on the drawdowns for hurricane season. He continued to explain that he would be interested to see what time of day or month SCE&G began to take the lake down, and to what level. Steve also asked what was done if there was an emergency downstream where someone's life was at risk, and if they could stop generation in that case. Bill Argentieri replied that they have received a call of that nature before and the generation was shut down.

After more brief discussion on the use of Saluda the group compiled a list of requested information. Bill noted that he would meet with Lee Xanthakos in order to compile the answers to these questions.

List of Requested Information:

- Weekly generation reports for all plants on SCE&G's system between January and December of 2005 (The group will start this process by looking at one weeks worth or information and decide what more is needed)
- Reasons why certain plants on the system were operated.
- Time periods during which Broad River flows were greater than 40,000 cfs
- How and when the gas turbines are used on the system

- How Fairfield is used
- Ranges of costs for the purchase of megawatt hours.
- Reserves that were requested in 2005 by other utilities and the amounts of megawatts that were called upon.

Stacia Hoover

From: Alison Guth
Sent: Wednesday, October 25, 2006 3:50 PM
To: Winward point Yacht Club ; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Amy Bennett; Andy Miller; Bertina Floyd; Bill Argentieri; Bill Brebner ; Bill East; Bill Green (BGreen@smeinc.com); Bill Hulslander; Bill Marshall; Bill Mathias; Bob Olsen; Bob Seibels (bseibels@yahoo.com); Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Duncan (duncane@mrd.dnr.state.sc.us); Edward Schnepel; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; Joel Huggins ; John and Rob Altenberg; John Davis (johned44@bellsouth.net); John Frick (jsfrick@mindspring.com); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Styer ; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Linda Lester ; Malcolm Leaphart; Marianne Zajac; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Phil Hamby ; Prescott Brownell; Randal Shealy; Randy Mahan; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener (SKEENER@sc.rr.com); Robert Lavisky; Roger Hovis ; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sandra Reinhardt; Sean Norris; Shane Boring; Skeet Mills ; Steve Bell; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Theresa Thom; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Valerie Marcil; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Wenonah Haire; Mike Schimpff
Subject: All RCG's Draft Meeting Notes

Hello All,

Attached are the draft meeting notes from the All RCG's Meeting on October 12. The sign in sheets did not make it all the way around the room so if you were left off the attendance list let me know. Please let me know of any changes or additions to the notes by November 8th. Thanks, Alison

2006-10-12 draft Meeting Minut...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
All RCGs Operations Meeting

Saluda Shoals Park
October 12, 2006

Draft acg 10-25-06

ATTENDEES:

Alison Guth, Kleinschmidt Associates
Alan Stuart, Kleinschmidt Associates
David Price, LM Power Squadron
Kim Westbury, Saluda County
Bret Hoffman, Kleinschmidt Associates
Ronald Scott, Lexington County
Patrick Moore, CCL, AR
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Bob Olson, NRE
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Dick Christie, SCDNR
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Bob Seibels, Riverbanks Zoo
Bill Argentieri, SCE&G
Karen Kustafik, CoC Parks & Rec
Bill Brebner, YCOA
Roy Parker, LMA
Steve Summer, SCANA Services
Randy Mahan, SCANA Services
Ray Ammarell, SCE&G
Shane Boring, Kleinschmidt Associates
Dave Anderson, Kleinschmidt Associates
Amy Bennett, SCDHEC
Jim Ruane, REMI
Trisha Priester, Lexington County
Andy Miller, SCDHEC
Reed Bull, Midlands Striper Club
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Mike Schimpff, Kleinschmidt Associates
Tom Bowles, SCE&G
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Bob Perry, SCDNR
Theresa Thom, NPS
Ed Schnepel, LMA
Ed Diebold, Riverbanks Zoo
Jon Quebbeman, Kleinschmidt Associates
Mike Waddell, Saluda TU
Amanda Hill, USFWS
Kenneth Fox, LMA
Bob Keener, LMA & LMSCA
Bud Badr, SCDNR
Bob Keener, LMA

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SALUDA HYDRO PROJECT RELICENSING
All RCGs Operations Meeting

Saluda Shoals Park
October 12, 2006

Draft acg 10-25-06

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An Understanding Of Hydrology – *Dr. Bud Badr : Coming Soon*

Discussion On The HEC-ResSim Operations Model – *Mike Schmipff & Jon Quebbeman – Kleinschmidt Associates : http://www.saludahydrorelicense.com/documents/SaludaProject10-12a.pdf*

Following the presentation on Alternative Generation, the floor was opened up for questions. One individual asked how the reliability numbers presented in the presentation were calculated. Carl H. replied that in order to calculate those numbers, they looked at forced outage rates, routine maintenance, as well as industry numbers. Bill A. also explained that many of the equipment cost numbers come from recent numbers that the vendors supplied. The group also briefly discussed how future demands will be fulfilled. One individual asked if SCE&G has evaluated how Saluda may be used in the future. Steve S. replied that SCE&G is looking at fulfilling future capacity needs through a nuclear station. There was also brief discussion regarding the use of Saluda over the past year. Bill A. explained that last year SCE&G tried to keep the lake level up around 358' and because of this, they had to get rid of the rainwater that entered the system rapidly to avoid flooding. Due to problems with some of the other units at Saluda, Unit 5 was run to expel the excess rainwater. Reed B. also asked if there was any way to look at how Saluda was used for reserve in the past in order to predict how Saluda may be used for reserve in the future. Randy M. noted that because of the unpredictable nature of reserve calls, it would be difficult to forecast how often they may be called upon for reserve in the future.

After a short break, Dr. Bud Badr gave a presentation on hydrology to the group. There were no questions following Dr. Badr's presentation.

The next presentation was given by Mike Schmipff and Jon Quebbeman on the HEC-ResSim model developed for Saluda. The presentation can be viewed from the link above. Mike S. explained that the HEC-ResSim model was used for Lake Murray and was incorporated with the HEC-Ras model for the lower Saluda River. The floor was open for questions throughout the presentation. Tony B. noted that in the last 16 years he doesn't believe there has been any major flood events, and asked if something was built into the model to account for this. Mike S. explained that this being a water allocation model, was not as concerned about the high flow times because water can be allocated for all the needs. He noted that the concern lies in the low flow times. Jeff D. asked if data from the Catawba Wateree model could be integrated into the Saluda model. Jon Q. noted that it was possible to add in other data to the model, however he noted that he did not believe it would be necessary or appropriate to add the Catawba data in.

The group began to discuss in a little more detail the constraints to be developed by the Resource Conservation Groups. Dave A. asked if the flows in the lower Saluda River can be calculated at the gage by the Zoo. Jon Q. replied that it could. Dave A. also asked if the model could predict what would happen when Saluda is used for reserve. Jon Q. explained that they were going to handle this by adding in, for example, 200 MW, 1 day a month, for 24 hours. Dave A. asked how the constraints will be obtained from the Resource Conservation Groups. Jon Q. noted that it depended on the RCGs time schedule, once an RCG makes a recommendation for the model, he could input the data. Ron A. added that he believed that instream flows would be the last input to the model. Mike S. and Jon Q. concluded their presentation and the group adjourned.

Stacia Hoover

From: Bret Hoffman
Sent: Monday, October 02, 2006 4:39 PM
To: 'Tony Bebber'; Alan Stuart; Alison Guth; 'Amanda Hill'; 'Bill Argentieri'; 'Bill Hulslander'; 'Bill Marshall'; 'Bud Badr'; 'Charlene Coleman'; 'Dave Landis'; 'Dick Christie'; 'Feleke Arega (aregaf@dnr.sc.gov)'; 'George Duke'; 'Gerrit Jobsis (American Rivers)'; 'Gina Kirkland'; 'Hank McKellar'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Joy Downs'; 'Kristina Massey'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Mark Leao'; 'Mike Summer (msummer@scana.com)'; 'Mike Waddell'; 'Parkin Hunter'; 'Patrick Moore'; 'Randal Shealy'; 'Randy Mahan'; 'Ray Ammarell'; 'Russell Jernigan'; 'Steve Bell'; 'Suzanne Rhodes'; 'Theresa Thom'; 'Tom Ruple'; 'Tom Stonecypher'; Jon Quebbeman; Bret Hoffman; 'Bob Olsen'; Bret Hoffman; Mike Schimpff
Subject: August 24 Operations TWC meeting notes

Good afternoon,

The final meeting notes from the August 24, 2006 Operations TWC meeting are attached.

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2006-08-24 Op
TWC Meeting Note..

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS TECHNICAL WORKING COMMITTEE

Saluda Hydro Training Center
August 24, 2006

ATTENDEES:

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Jon Quebbeman, Kleinschmidt
Feleka Arega, SCDNR
Larry Turner, SC DHEC
Michael Waddell, TU
Mike Schimpff, Kleinschmidt
Ray Ammarell, SCE&G

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- Refine model inputs for inflows and evaporation; if necessary, consider longer period of input from Chappells gage.

Jon Quebbeman, Mike Schimpff

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Jon Quebbeman, Mike Schimpff

- Contact USGS for verification of data used in model during joint RCG meeting.

Ray Ammarell

- Check with SCE&G management about posting the model for downloading.

Ray Ammarell

DATE OF NEXT MEETING: **October 12, joint meeting with all RCG's**

MEETING NOTES:

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Mike S. opened the meeting and stated the objective was to review and finalize, or make recommendations to finalize, the base model structure. Using a projector, Jon and Mike displayed numerous screenshots from the HEC-ResSim program, explaining the various inputs and simulations of the model.

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The reservoir stage – storage data was provided by SCE&G, and a reservoir guide curve was derived by averaging 16 years of observed lake level data (from 1990 to 2006). The hydrologic data for inflows corresponded with this 16-year period, chosen because it is the total combined period of record for all inflow gages used in the model. Reservoir evaporation was calculated using a formula incorporating average monthly temperatures. Bob mentioned the evaporation could be examined annually versus monthly. Ray explained that there are two possible calculation method for evaporation, pan and free-surface; he also presented the idea of using NOAA Atlas evaporation data. Mike and Jon agreed to revise evaporation from the reservoir.

The total 16-year period was used to check the accuracy of the model by two methods: 1) matching the outflow of the model to the observed outflows and comparing the calculated reservoir stage versus the actual recorded stage, and (2) matching the model's reservoir stage with the observed stage and comparing the calculated versus recorded outflows. Most years modeled extremely well for the stage matching, with the exception of two heavy inflow years. During those years, the reservoir elevation was calculated higher than actually occurred, even reaching El. 360'. This triggered the model to simulate flood control (opening spillway gates); in reality, the reservoir did not reach that elevation during those years; the spillway gates have not been operated since before Unit-5 was added (1971). Bob noted that the sudden increases during the heavy inflow years that triggered flood control did not readily return the reservoir to acceptable levels (below El. 360'). It

was realized that this is probably due to the flood control mode overriding the stage matching and switching the model to matching outflows. It was suggested that one of the more significant un-gauged inflows may need adjustment to account for direct lake precipitation, and Larry also proposed doing a volume comparison.

Discussion was held regarding the possibility of eliminating the Little River and Bush River gage contributions because they have a limiting period of available data for inflows. Using only the Chappells gage would allow inflow data dating back to 1965, when the gage was relocated. This would mean changing the Little River and Bush River watershed contributions to un-gauged inflows by following the Chappells rating. Mike and Jon will try to fine-tune the model with all current contributions (including Little River and Bush River gages) to better simulate the recorded stage conditions. If this does not work, the option of removing these two gages and just using the Chappells gage (capturing a longer period of inflow records) will be used. As they make adjustments and refine the model, Mike and Jon will email hydrographs showing comparative modifications to the TWC members. Bud suggested using a back-calculated method of known discharge and stage to determine the inflow hydrograph. This method is preferred as it eliminates uncertainty with respect to evaporation, local basin inflow, and inflow from direct precipitation onto the reservoir.

Lower Saluda River

For the lower Saluda River, 22 cross-sections were used to develop a 1D flow profile model using HEC-RAS. Jon showed graphs of several cross-sections, and noted that roughness coefficients are used for calibration of the model to several steady state calibration points. Cross-sections for the Congaree were also developed to route flows through and determine stages near the Congaree National Park. Flows were calibrated to the USGS curve at the gage near Columbia. The calculated flows from the model were very close to the recorded flows, with calculated flows being slightly higher at the upper end of the flow range and slightly below recorded flows at the lower end.

The question of flow contributions from tributaries on the lower Saluda River arose; the model does not individually address those flows because they are not related to operations. However, overall contributions from the watershed for the USGS gage near Columbia are included, and tributaries are part of that inflow. Since the model treats tributaries as part of the river's cross-section, the calculated velocities in reaches containing tributaries are drastically reduced; predictions in these reaches thus would not be representative of actual flow in the main river channel, and would affect calculated flow travel times. To eliminate these artificial velocity reductions, theoretical levees were placed across the mouths of tributaries entering the main river channel.

Constraints and Prioritization

Since the purpose of the model is to balance stakeholder interests with hydrologic and physical lake operation limitations, the question arose on how to prioritize constraints within the model. It was agreed that the TWC's purpose was to build an accurate model, and the stakeholders and RCG's would determine the prioritization of constraints. Ray noted that priorities will be alluded to in a low-flow protocol (drought contingency plan). In a typical (simple) low-flow situation, this protocol gives priority to municipal water supply, then environmental constraints (such as minimum flows), then other interests (generation, recreation, etc.). While Lake Murray provides some municipal water supply, this is not expected to be an issue because all supply intakes are below El. 345'. Ray reiterated SCE&G's interest is using Saluda for reserve capacity, then for reservoir management via a guide curve.

Another constraint discussed was the winter drawdown limitation; the purpose of the drawdown is to create reservoir storage for spring rains, and a higher winter reservoir elevation reduces this available storage. Inflows greater than the capacity of Saluda (~18,000 cfs) cause the reservoir to rise; once the lake reaches El. 360', spillway gates are opened in an attempt to match inflows and stabilize the reservoir level. Ray explained that SCE&G considers operating the spillway gates a failure to manage the reservoir as well as a waste of a resource. The Probable Maximum Flood (PMF) was also discussed, which Ray explained can be routed through Saluda without overtopping the dam; this requires that the reservoir is at or below the starting elevation for the PMF event. The FERC will require SCE&G to maintain the ability to route the PMF. The starting elevation for the PMF event, as well as the potential for reaching El. 360' (spillway operation threshold), will be determining factors in the model for the drawdown limitation.

Model Availability

The group held a discussion about whether or not the actual model would be available to stakeholders. The program is readily available for anyone to download from the Corps of Engineers website, and the watershed data can also be obtained online. Jon noted that the file size of the Saluda base model was thirty to forty megabytes, without the operating software. It was agreed that making the model available would not be of any harm, as it would likely only be used by the few people who understand the HEC software. Since SCE&G is paying for the services to develop the model, Ray will ask management for their approval prior to it being available for downloading. If the model data is made available, the one used for relicensing will not be open for changes other than RCG-submitted inputs; a statement to this affect will be posted on the website with the download link. The sole purpose of the TWC is to create the base model, which will not be open for change by outside interests.

Next Step

As the meeting closed, it was agreed that the base model structure was good, and Mike and Jon agreed to fine-tune inputs in attempts to more closely match calculated results with recorded conditions; their progress will be communicated to other TWC members via emails of hydrograph screenshots. The group agreed that the base model can be finalized without another TWC meeting, and considered it appropriate to present the model to all RCG's in a joint meeting.

Cheryl Balitz

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Sent: Tuesday, October 03, 2006 11:33 AM
To: Bret Hoffman; 'Tony Bebber'; Alan Stuart; Alison Guth; 'Amanda Hill'; 'Bill Argentieri'; 'Bill Hulslander'; 'Bill Marshall'; 'Bud Badr'; 'Charlene Coleman'; 'Dave Landis'; 'Dick Christie'; 'Feleke Arega (aregaf@dnr.sc.gov)'; 'George Duke'; 'Gerrit Jobsis (American Rivers)'; 'Gina Kirkland'; 'Hank McKellar'; 'Jeff Duncan'; 'Jennifer O'Rourke'; 'Joy Downs'; 'Kristina Massey'; 'Larry Turner (turnerle@dhec.sc.gov)'; 'Mark Leao'; 'Mike Summer (msummer@scana.com)'; 'Mike Waddell'; 'Parkin Hunter'; 'Patrick Moore'; 'Randal Shealy'; 'Randy Mahan'; 'Ray Ammarell'; 'Russell Jernigan'; 'Steve Bell'; 'Suzanne Rhodes'; 'Theresa Thom'; 'Tom Ruple'; 'Tom Stonecypher'; Jon Quebbeman; 'Bob Olsen'; Bret Hoffman; Mike Schimpff
Subject: Operations TWC meeting notes correction

Hello all,

Bret asked me if I could re-issue these notes to you as he will be out in the field. The meeting actually occurred on August 23rd, not the 24th as was previously listed. I have attached a final copy of the notes that includes the correct meeting date. No other changes were made to the notes. Thanks, Alison

2006-08-23 Op TWC Meeting Note..

-----Original Message-----
From: Bret Hoffman
Sent: Monday, October 02, 2006 4:39 PM
To: Tony Bebber; Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; Bill Hulslander; Bill Marshall; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; Jeff Duncan; Jennifer O'Rourke; Joy Downs; Kristina Massey; Larry Turner (turnerle@dhec.sc.gov); Mark Leao; Mike Summer (msummer@scana.com); Mike Waddell; Parkin Hunter; Patrick Moore; Randal Shealy; Randy Mahan; Ray Ammarell; Russell Jernigan; Steve Bell; Suzanne Rhodes; Theresa Thom; Tom Ruple; Tom Stonecypher; Jon Quebbeman; Bret Hoffman; Bob Olsen; Bret Hoffman; Mike Schimpff
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<< File: 2006-08-24 Op TWC Meeting Notes final.pdf >>

MEETING NOTES

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OPERATIONS TECHNICAL WORKING COMMITTEE

Saluda Hydro Training Center
August 23, 2006

Final brh 10-2-06

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Lower Saluda River

For the lower Saluda River, 22 cross-sections were used to develop a 1D flow profile model using HEC-RAS. Jon showed graphs of several cross-sections, and noted that roughness coefficients are used for calibration of the model to several steady state calibration points. Cross-sections for the Congaree were also developed to route flows through and determine stages near the Congaree National Park. Flows were calibrated to the USGS curve at the gage near Columbia. The calculated flows from the model were very close to the recorded flows, with calculated flows being slightly higher at the upper end of the flow range and slightly below recorded flows at the lower end.

The question of flow contributions from tributaries on the lower Saluda River arose; the model does not individually address those flows because they are not related to operations. However, overall contributions from the watershed for the USGS gage near Columbia are included, and tributaries are part of that inflow. Since the model treats tributaries as part of the river's cross-section, the calculated velocities in reaches containing tributaries are drastically reduced; predictions in these reaches thus would not be representative of actual flow in the main river channel, and would affect calculated flow travel times. To eliminate these artificial velocity reductions, theoretical levees were placed across the mouths of tributaries entering the main river channel.

Constraints and Prioritization

Since the purpose of the model is to balance stakeholder interests with hydrologic and physical lake operation limitations, the question arose on how to prioritize constraints within the model. It was agreed that the TWC's purpose was to build an accurate model, and the stakeholders and RCG's would determine the prioritization of constraints. Ray noted that priorities will be alluded to in a low-flow protocol (drought contingency plan). In a typical (simple) low-flow situation, this protocol gives priority to municipal water supply, then environmental constraints (such as minimum flows), then other interests (generation, recreation, etc.). While Lake Murray provides some municipal water supply, this is not expected to be an issue because all supply intakes are below El. 345'. Ray reiterated SCE&G's interest is using Saluda for reserve capacity, then for reservoir management via a guide curve.

Another constraint discussed was the winter drawdown limitation; the purpose of the drawdown is to create reservoir storage for spring rains, and a higher winter reservoir elevation reduces this available storage. Inflows greater than the capacity of Saluda (~18,000 cfs) cause the reservoir to rise; once the lake reaches El. 360', spillway gates are opened in an attempt to match inflows and stabilize the reservoir level. Ray explained that SCE&G considers operating the spillway gates a failure to manage the reservoir as well as a waste of a resource. The Probable Maximum Flood (PMF) was also discussed, which Ray explained can be routed through Saluda without overtopping the dam; this requires that the reservoir is at or below the starting elevation for the PMF event. The FERC will require SCE&G to maintain the ability to route the PMF. The starting elevation for the PMF event, as well as the potential for reaching El. 360' (spillway operation threshold), will be determining factors in the model for the drawdown limitation.

Model Availability

The group held a discussion about whether or not the actual model would be available to stakeholders. The program is readily available for anyone to download from the Corps of Engineers website, and the watershed data can also be obtained online. Jon noted that the file size of the Saluda base model was thirty to forty megabytes, without the operating software. It was agreed that making the model available would not be of any harm, as it would likely only be used by the few people who understand the HEC software. Since SCE&G is paying for the services to develop the model, Ray will ask management for their approval prior to it being available for downloading. If the model data is made available, the one used for relicensing will not be open for changes other than RCG-submitted inputs; a statement to this affect will be posted on the website with the download link. The sole purpose of the TWC is to create the base model, which will not be open for change by outside interests.

Next Step

As the meeting closed, it was agreed that the base model structure was good, and Mike and Jon agreed to fine-tune inputs in attempts to more closely match calculated results with recorded conditions; their progress will be communicated to other TWC members via emails of hydrograph screenshots. The group agreed that the base model can be finalized without another TWC meeting, and considered it appropriate to present the model to all RCG's in a joint meeting.

Stacia Hoover

From: Alison Guth
Sent: Monday, July 17, 2006 2:44 PM
To: Theresa Thom; Alan Stuart; Alison Guth; Bill Argentieri; Bill Cutler; Bill Marshall; Jennifer O'Rourke; Karen Kustafik; Mike Waddell; Patrick Moore; Steve Bell
Cc: Tony Bebber; Amanda Hill; Bill Hulslander; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; Jeff Duncan; Joy Downs; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Mark Leao; Mike Summer (msummer@scana.com); Parkin Hunter; Ralph Crafton; Randal Shealy; Randy Mahan; Ray Ammarell; Russell Jernigan; Suzanne Rhodes; Tom Ruple; Tom Stonecypher; Bret Hoffman
Subject: Saluda Generation Review Draft Notes

Hello all,

Attached is the draft set of notes from the Saluda Generation Review TWC that was held July 11th. Please have any comments to me by July 31st. Thanks, Alison

2006-07-11 draft Meeting Minut...

Alison Guth
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
GENERATION REVIEW TWC

Lake Murray Training Center
July 11, 2006

7-15-06 draft acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Bill Argentieri, SCE&G
Bill Marshall, DNR, LSSRAC
Michael Waddell, TU
Patrick Moore, SCCCL, Am. Rivers
Steve Bell, Lake Watch
Randy Mahan, SCANA Services
Tom Eppink, SCANA Services
Karen Kustafik, City of Columbia Parks
Theresa Thom, Congaree National Park

DATE: July 11, 2006

These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

HOMEWORK

- Send Mike Waddell the FERC form for the other ¾ of 2005 – *Bill Argentieri*
- Arrange for Lee Xanthakos to attend the next RCG meeting – Bill Argentieri
- Prior to next RCG meeting, email Bill A. dates from which information is requested on how plants were operated – *TWC members*

DISCUSSION

Alan Stuart welcomed the group and noted that the meeting had been convened at the request of stakeholders, and the primary purpose was to review the information distributed by Bill Argentieri (listed in blue) after the April meeting. The group decided to review each of the items and discuss questions as they came up.

1. Provide a weekly generation report for all of the plants on the SCE&G system. At this time the group would like to see one of these reports, let's say the week of August 28, 2005. If it provides the group with the information we are looking for,

I will obtain a copy of each week from January 1, 2005 through December 31, 2005.

Response: The data requested regarding prior operation of all plants on our system is not maintained in the manner requested. We do not keep a weekly aggregate of generation for our plants. Thus, this information is not readily available. In addition, generation information at this level of detail is business-confidential and market-sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Once information of this nature is disclosed to the market, there is no practical way to undo damage to SCE&G and its customers.

Nevertheless, in an effort to give you all available non-confidential material, attached are excerpts from the FERC Form - 1 annual filing made by SCE&G at the Federal Energy Regulatory Commission for the calendar year ending December 31, 2005. These excerpts include the annual generation for each of SCE&G's facilities.

After the group reviewed the first question Steve Bell asked if records were available on how SCE&G operated its system to meet demands for a given day. Bill A. replied that they do not have all that information in one place. He noted that each plant maintains a record of they operate, however it is not all in one form. Bill A. also noted that they do provide some information to the Public Service Commission, however, the detail that the group has requested is not for the general public to have access to. Steve asked if the group could pick out particular days in order to receive information on, and Mike Waddell suggested that the past plant outage in May be used as an example. Bill noted that he had information on the past plant outage in June but not in May. Bill A. briefly reviewed the June 21 occurrence with the group and discussed the logic behind what particular plants were used. It was noted that for that occurrence, many plants on SCE&G's own system, including Saluda, were used and they did not have to call upon VACAR. Bill A. noted that since Saluda was being used in this emergency instance, that they had contacted VACAR to notify them that they were using their reserve and that it would probably not be available for the next hour to hour and a half. This was when SCE&G could purchase power on the market or bring other units online. Steve asked if SCE&G was required to first expend all of their resources before VACAR was called. Bill replied that they would have to first use their 200 in reserve before they called on VACAR or they had the option of meeting the need internally. Bill A. also added that there were advantages to meeting the needs internally.

The group noted that they had sufficiently discussed the first item and moved to the second question.

2. Provide a write-up on the reason why SCE&G operates their plants in the manner that they are operated.

   Response: Describing how the units are operated on any particular day provides information of only limited value, since operations on one day do not necessarily correlate to operations on future days. Actual operations of the plants are subject to an infinitely variable set of conditions. Nevertheless, the general process/protocol (Economic Dispatch) relied upon to determine which plants/units SCE&G at least "plans" to operate is reasonably consistent.

   Economic Dispatch is a generation planning tool employed faithfully at SCE&G. Twice each day, SCE&G engineers in the Economic Resource Commitment (ERC) group communicate with employees in the Transmission Services Operation Planning (OPS) group. These two functionally separate groups agree on hourly load forecasts for every hour of the coming 7 days.

   Once agreement upon the forecast has been reached, the ERC engineers develop hourly economic dispatch plans to match. The economic dispatch plans that are created project a mix of planned generation from SCE&G units as well as off-system purchases. Units and purchases are economically stacked in every hour (most economically favorable to least economically favorable) to create a plan the system can be controlled by to most economically serve its obligations – including the possibility of serving reserves.

   Once the Reliability Coordinators review the economic dispatch plan and make the changes deemed necessary to preserve reliability (remember, reliability trumps economics), the result is a constrained dispatch plan. For example, it may be more economical to generate from Plant A, but the Reliability Coordinators may determine it not to be reliable to do so from a transmission of energy perspective. Conversely, it may not be as economical to generate from Plant B, but it may be necessary to do so in order to serve load in a remote area. Saluda Hydro operations provide a perfect example of this. As one of SCE&G's most economical plants, it should always be generating from a purely cost-of-generation perspective. Nevertheless, because of reliability factors, it is kept off-line so that it can be available to serve as reserves if emergencies occur. Some

amount of generation must be available to respond to emergency reserve calls within the fifteen minute time period required by SCE&G's VACAR/SERC/NERC obligations.

The Reliability Coordinators hand-off the constrained dispatch plan to the System Controllers who then use it as a roadmap by which to operate the system. Inevitably, real life conditions do not exactly follow the assumptions the ERC, OPS, and Reliability Coordinators relied upon to create the plan, so the System Controllers make real time adjustments to operate the system.

The group began to discuss the dispatch plan and Randy Mahan explained that there were always real-life factors that could not be predicted. Steve inquired as to whether decisions to run certain plants were made for economical reasons. Bill A. noted that there are environmental issues to be considered that often trump the economic considerations. After this question was sufficiently answered the group moved on to discuss Item number 3.

3. Provide a write-up of how SCE&G uses the other plants in our system when Saluda is not available due to a scheduled outage of the whole plant or just one or two units. Last year could be a good example of the second half of this question since some of the units were not operational the entire year. What did you use for reserve when Unit 4 was not available?

   Response: The use of generating units other than Saluda's units for reserves depends on the specific situation. Over time we have seen a variety of situations in which Saluda's units become unavailable to serve reserve requirements. For example, Saluda's units may be unavailable because of maintenance activities at Saluda. Likewise, sometimes it is necessary that divers be in and around the towers. Operations are suspended during this time and the units are made unavailable for use to respond to reserves until this activity is completed. A more subtle example is presented when the units are already fully loaded, perhaps in preparation for inflows from a tropical storm or hurricane or during a time when lake levels are intentionally being reduced for dam or equipment maintenance. In the hurricane example, because the units are generating, they are not offline and available in 15 minutes which are both requirements for being counted as system reserves. And even if not fully loaded, to the extent the units are loaded, we cannot count that already-in-operation capacity towards our reserves obligation.

Most situations are controllable and planned ahead of time so that the generation plans satisfy both economic and constrained dispatch objectives. For example, if divers need to work on the towers, SCE&G makes sure the work is scheduled when generation from Fairfield Pumped Storage is not needed to serve load. This allows Fairfield Pumped Storage to be dedicated for reserves. Other controllable situations are scheduled maintenance and planned releases, assuming we don't have to deal with high flows down the Broad River at the same time. Canoeing for Kids is a good example of a planned release – it's typically scheduled on a Saturday during an expected low load period. For the 2006 event, Fairfield Pumped Storage was used to carry reserves.

When Saluda units fail or require maintenance and need to be taken off line, the only option is to carry reserves on Fairfield Pumped Storage or on a combination of Fairfield Pumped Storage and quick-start turbines. A combination of the two is most common because individually, they are problematic. Fairfield Pumped Storage has certain constraints such as limited operations when the Broad River is at or above 40,000 cfs. Further discussion about turbine operations appears below in response to questions 4 and 5.

A final alternative is to back down steam generation across multiple units. This is the least desirable method of carrying reserves as well as the most costly for SCE&G customers. Because of the slow response of coal-fired generating units, to achieve the full fifteen minutes reserve requirement obligation, multiple units must be backed off if they are to be replied upon. Also, when using these units, there is a real potential for unit trips. Nevertheless, even if a plan to rely on backing down coal fired generation were to be put in place, this would not fully meet the offline and available definition of VACAR/SERC/NERC. Rather, it more closely resembles a backed down and available situation.

In reference to the third item, Mike asked if SCE&G has enough capacity on its system to handle all of the current demands. Randy noted that they did have enough capacity, and explained that SCE&G does the best that they can to plan to have enough generation to meet the current needs as well as the expected growth. The group cited the construction of the new nuclear plant as an example.

There was brief discussion on the use of Fairfield Pumped Storage Facility. Steve inquired as to how it was used and whether there were certain times of the year in which all of the capacity at that plant was used. Bill replied there were times when the entireity of Fairfild's capacity was used. Karen Kustafik asked if drought conditions could affect

the use of Fairfield. Bill A. noted that drought conditions could effect the pumping to refill Monticello Reservoir because there is a minimum flow requirement at Parr. It was also discussed that Fairfield could not add to flooding if there was 40,000 or more cfs already in the Broad River.

The group also noted that item 4 (listed below) was sufficiently answered and moved to discuss item 5.

4. Provide a write-up of what SCE&G does in an emergency situation when Saluda is available. How is FFPS used in the equation to meet reserve? Does SCE&G use any other plants on our system to meet this reserve, if so which ones are used? Is Saluda always the first plant used during an emergency? Is Saluda the last plant used in an emergency?

   Response: Fairfield Pumped Storage may be available if a base load or other currently generating unit trips. However, if the limited volume of water in Fairfield already is included in the generating plan to serve load later in the day, it may not be used to fulfill the Saluda mission for that day, i.e. to meet a reserves call. At other times however, even though Fairfield Pumped Storage may be planned for later use, if loads turn out not to be as high as forecasted, FFPS may be pressed into service to meet the emergency need. System Controllers must also consider the forecasted need for Fairfield Pumped Storage for the next day, as there may be a need to replenish the water supply for the upcoming day's use. While pumping back, obviously, FFPS cannot be counted on to supply reserves. Finally, there are flooding constraints that can take Fairfield Pumped Storage out of the picture all together. Flows equal to or greater than 40,000 cfs in the Broad River render FFPS unavailable for operation in the generating mode. As the system changes throughout the day, multiple factors continually must be considered. Dependence on a single facility for reserves is not prudent; flexibility of reserve sources is crucial for reliability.

   In addition to Fairfield Pumped Storage & Saluda Hydro, the other plants normally used for reserves are the quick-start turbines. Those are Urquhart Unit 4 and Parr units 1, 2, 3, & 4. Together they can generate about 108 MWs.

   Saluda is not always the first plant used to serve reserves, nor is it always the last. As described above, there are a variety of factors to consider in determining which unit should be called upon to meet reserves.

5. How does SCE&G use the gas turbines on our system to meet reserve? Why does SCE&G not use them more than we do now? When does SCE&G use the gas turbines in general, peaking, base load, etc.? How are the gas turbines used, are they started and run for a long period of time or just a few hours a day; started and run just to meet a peak demand then shut off?

   Response: See the responses to Questions 2, 3, & 4 above. Gas turbines are used to carry reserves in limited situations because they are not as reliable in meeting the strict NERC 15 minute requirements as Fairfield Pumped Storage and Saluda. Thus they are not used as often.

   In general, gas turbines are used in peaking situations and normally run for very short periods of time and then shut off. They are always brought on after all steam units and most of Fairfield Pumped Storage is loaded. They are the least economical generation units and fall very late in the economic dispatch stack. Even though they are not as economical, SCE&G still runs them as peaking plants to serve load while it keeps Saluda off line for reserves. Were SCE&G to use turbines and part of Fairfield Pumped Storage for reserves, then to replace their peaking capacity, Saluda would have to be used as a peaking plant in their stead. This would mean Saluda would be used much more frequently than it is now.

While discussing item 5, Patrick Moore noted that during relicensing the possibility exists that some of the studies being done will produce data that would negate SCE&G's ability to use Saluda for reserve. He continued to ask what would be done for reserve if Saluda is not available. Tom Eppink noted that SCE&G is required to, and currently, looking at all options. He continued to note that this data will be shared with the group as soon as it is ready. Bill A. added that they hope to have a presentation ready sometime in September. Bill A. noted that they would also like to look at meeting environmental requirements by upgrading the units themselves. He explained that they are looking at upgrading the units with more efficient runners.

The group moved to item 6

6. Please provide the date, time, and MW that SCE&G was requested to provide reserve power during 2005. Provide the reason for the reserve usage, i.e. called by other utility, to meet our own emergency situation, etc. if the information is available. Which plants on the SCE&G system were used to meet the reserve request?

Response: Reports that SCE&G compiles regarding reserves operations have sensitive information belonging to companies other than SCE&G. What can be provided without violating those confidences follows. SCE&G played a role as part of the VACAR Reserve Sharing Group Agreement on 9 occasions during 2005. On 6 of those occasions SCE&G called on reserves from its VACAR Reserve Sharing Group partners. On the other 3 occasions SCE&G supplied reserves to other companies. That makes a total of 9 Reserve Sharing Group events in which SCE&G participated. Except for the information it has shared over the past couple of years (and continues to publish) regarding its operation of Saluda to meet reserve requirements, SCE&G has not compiled reports on its use of Saluda for internal reserve needs.

Steve proposed that the stakeholders choose a certain date that SCE&G could then find out more information on what plants were used and why. Bill A. replied that the situation varies on each day and that he does not believe the information is kept in such detail all in one place. Steve also noted that he believed that there would be questions in the upcoming RCG about why some of this information is kept confidential. Bill A. noted that they would have an attorney present to explain this to the group. Bill A. also noted that he would have Lee Xanthakos come to the next RCG meeting in an effort to try to answer some of the groups questions about how the system was run on certain days. A homework item for the stakeholders was to pick out dates they were interested in and they would be sent to Lee prior to the meeting.

Bill Marshall also noted that he was interested in knowing the Megawatts in percent that were used during the 9 Reserve Sharing Group events as well as the flows in the river during those instances.

The group began to discuss item number 7.

7. Provide a write-up of how SCE&G determines when and at what rate to lower Lake Murray during the annual fall drawdown?

   Response: SCE&G considers several factors in determining the appropriate target lake elevation during fall drawdown include current lake elevation, the need to gradually drawdown over several months, expectations and planning for “normal” winter and spring rainfall, predicted or possible severe weather conditions (such as the possibility of tropical storms or hurricanes), and the need and ability to maintain reserves during and after drawdown. Rapid drawdown of the lake always raises the specter of potential detriment to the stability of the dam. This is

a major reason that SCE&G plans the annual drawdown to occur over several months. The other major issue to consider is Saluda Hydro's availability for reserve generation as discussed in the response to Question 3. To the extent Saluda is operating for other reasons, it cannot be counted as reserves in response to its VACAR/SERC/NERC reserves obligations.

Lake Murray is not a flood storage reservoir and must be operated to allow the lake level to be lowered through plant generation without the use of the emergency spillway gates. As the name implies, the spillway gates are for emergency use, to address circumstances where inflow or expected inflow is greater than the discharge capacity of the plant at a time when the lake level is close to the normal maximum pool elevation. SCE&G goes to great pains to manage the lake level so this situation does not occur. A target water level reduction, usually one to two feet per month, has been considered a "typical" drawdown rate from late August through December in anticipation of normal rainfall from January through April of the following year. Generation during this drawdown period is performed as prudently as possible taking into account the issues described in Question 2

Statistically, the highest probability of a hurricane affecting the Saluda River Basin is in the month of September. Thus the lake level drawdown typically will start around the end of August. If there is a possibility of the approach of a tropical storm or hurricane to the Saluda River Basin area, which may appear to require lowering the lake level in anticipation of the storm, SCE&G will use a Flow Forecasting Model that evaluates data from the National Weather Service and United States Geological Survey to predict the elevation of Lake Murray under various discharge scenarios. Based on the results of specific model analyses, SCE&G will then lower the lake level as necessary to keep the level safely below elevation 360' to maintain compliance with our FERC license. Although hurricane season ends in November, a typical lake level drawdown continues through the end of December in anticipation of winter and spring rains as noted above.

Steve began to ask about the planning behind the lowering of the lake. Bill A. noted that it greatly depends on the weather patterns. He explained that Jim Landreth has been working with the lake groups to keep the level up as high as possible for as long as possible. Bill pointed out that the drawdown's purpose is to prepare for the hurricanes in September and the heavy rains in January. He also added that water balance is part of the

operations model, and until they receive all of the information, SCE&G is working on keeping the lake level as high as possible, while still being prepared for rains.

On a separate topic, Bill Marshall noted that he understood the steep increase in cfs under emergency situations but inquired as to why there were such steep rises for planned releases. Bill A. noted that there were several reasons behind this, one being that they needed to try to use the water in an economical manner, as well as having the system back offline and ready for use as reserve. Bill A. noted that as part of their last settlement agreement meeting with SCCCL, they were looking into having a more gradual release for planned releases, however, in an emergency situation there will need to be an immediate release.

Question 8 was skipped (listed below) and the group moved to question 9.

8. Provide the times in which the Broad River flows were at or greater than 40,000 cfs in 2005.

   Response: The SCE&G system dispatchers use three gages (Broad River near Carlisle (02156500), Tyger River near Delta (02160105), and Enoree River at Whitmire (02160700)) above Parr Hydro to determine when flows are **approaching** 40,000 cfs on the Broad River. The dispatchers will add the flows of these three gages to calculate the total flow in the Broad River at Fairfield Pumped Storage. To determine how many times the Broad River actually achieved flows equal to or in excess of 40,000 cfs, for this report we will look at the Broad River at Alston Gage (02161000) which is downstream of Parr Hydro on the Broad River. When the flows are at or above 40,000 cfs at the Alston Gage, Fairfield Pumped Storage will already have been taken off line in accordance with our FERC license. The attached spreadsheet lists the times the Broad River exceeded 40,000 cfs based on the Broad River at Alston Gage. The items highlighted (in yellow) show the number of times and percent of time for each month that the Broad River was at or above 40,000 cfs. Below are the exact dates/times in 2005 that the Broad River was at or above 40,000 cfs based on the Broad River at Alston Gage. SCE&G cannot validate and does not vouch for the accuracy of the data provided by the USGS gage.

   March 29 - From 4 pm to 12 am
   March 30 - From 1 am to 10 pm
   June 2 - From 1 pm to 10 pm
   October 8 - From 6 pm to 10 pm

October 9 - From 12 pm to 12 am
October 10 - From 1 am to 4 am

9. Provide a range of costs for MWHs of generation that was purchased on the open market for the last two years (2004 & 2005).

Response: This data is business confidential and market sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Should power marketers have knowledge of these critical price points, they could adjust their bids accordingly. SCE&G could then be forced to buy energy at less favorable rates. Ultimately, SCE&G system consumers would receive less benefit from energy sales and pay a higher cost for purchased energy if market participants know SCE&G's purchasing history. Once information of this nature is disclosed to the market, there is no practical way to undo the damage to SCE&G and its customers.

Broad River at Alston Gage (02161000) Flows

			High		
			.00 Flows below 40,000 cfs	1.00 Flows equal to or greater than 40,000 cfs	Total
MONTH	Jan	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
	Feb	Count	672	0	672
		% within MONTH	100.0%	.0%	100.0%
		% within High	7.7%	.0%	7.7%
		% of Total	7.7%	.0%	7.7%

Mar	Count	731	13	744
	% within MONTH	98.3%	1.7%	100.0%
	% within High	8.4%	28.9%	8.5%
	% of Total	8.3%	.1%	8.5%
Apr	Count	720	0	720
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.3%	.0%	8.2%
	% of Total	8.2%	.0%	8.2%
May	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Jun	Count	710	10	720
	% within MONTH	98.6%	1.4%	100.0%
	% within High	8.1%	22.2%	8.2%
	% of Total	8.1%	.1%	8.2%
Jul	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Aug	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Sep	Count	720	0	720

		% within MONTH	100.0%	.0%	100.0%
		% within High	8.3%	.0%	8.2%
		% of Total	8.2%	.0%	8.2%
	Oct	Count	722	22	744
		% within MONTH	97.0%	3.0%	100.0%
		% within High	8.3%	48.9%	8.5%
		% of Total	8.2%	.3%	8.5%
	Nov	Count	720	0	720
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.3%	.0%	8.2%
		% of Total	8.2%	.0%	8.2%
	Dec	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
Total		Count	8715	45	8760
		% within MONTH	99.5%	.5%	100.0%
		% within High	100.0%	100.0%	100.0%
		% of Total	99.5%	.5%	100.0%

In conclusion, Patrick Moore asked if there was any way that the group could be provided with a high and a low cost for power paid over the last 10 years with no particular time sequence attached to it. Bill A. noted that he would ask about this. Mike also asked if Bill A. could send him the FERC form for the other ¾ of 2005. The group noted the homework assignments and adjourned.

Stacia Hoover

From: Alison Guth
Sent: Tuesday, August 08, 2006 3:33 PM
To: Theresa Thom; Alan Stuart; Alison Guth; Bill Argentieri; Bill Cutler; Bill Marshall; Jennifer O'Rourke; Karen Kustafik; Mike Waddell; Patrick Moore; Steve Bell
Cc: Tony Bebber; Amanda Hill; Bill Hulslander; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; Jeff Duncan; Joy Downs; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Mark Leao; Mike Summer (msummer@scana.com); Parkin Hunter; Ralph Crafton; Randal Shealy; Randy Mahan; Ray Ammarell; Russell Jernigan; Suzanne Rhodes; Tom Ruple; Tom Stonecypher; Bret Hoffman
Subject: 7-11-06 Saluda Generation Review notes

Hello all,

Attached are the final meeting notes from the Saluda Generation Review TWC meeting on 7-11-06. Thanks for all of the comments. Alison

2006-07-11 final Meeting Minut...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
GENERATION REVIEW TWC

Lake Murray Training Center
July 11, 2006

8-8-06 final acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Bill Argentieri, SCE&G
Bill Marshall, DNR, LSSRAC
Michael Waddell, TU
Patrick Moore, SCCCL, Am. Rivers
Steve Bell, Lake Watch
Randy Mahan, SCANA Services
Tom Eppink, SCANA Services
Karen Kustafik, City of Columbia Parks
Theresa Thom, Congaree National Park

DATE: July 11, 2006

These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

HOMEWORK

- Send Mike Waddell the FERC form for the other ¾ of 2005 – *Bill Argentieri*
- Arrange for Lee Xanthakos to attend the next RCG meeting – Bill Argentieri
- Prior to next RCG meeting, email Bill A. dates from which information is requested on how plants were operated – *TWC members*

DISCUSSION

Alan Stuart welcomed the group and noted that the meeting had been convened at the request of stakeholders, and the primary purpose was to review the information distributed by Bill Argentieri (listed in blue) after the April meeting. The group decided to review each of the items and discuss questions as they came up.

1. Provide a weekly generation report for all of the plants on the SCE&G system. At this time the group would like to see one of these reports, let's say the week of August 28, 2005. If it provides the group with the information we are looking for,

I will obtain a copy of each week from January 1, 2005 through December 31, 2005.

Response: The data requested regarding prior operation of all plants on our system is not maintained in the manner requested. We do not keep a weekly aggregate of generation for our plants. Thus, this information is not readily available. In addition, generation information at this level of detail is business-confidential and market-sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Once information of this nature is disclosed to the market, there is no practical way to undo damage to SCE&G and its customers.

Nevertheless, in an effort to give you all available non-confidential material, attached are excerpts from the FERC Form - 1 annual filing made by SCE&G at the Federal Energy Regulatory Commission for the calendar year ending December 31, 2005. These excerpts include the annual generation for each of SCE&G's facilities.

After the group reviewed the first question Steve Bell asked if records were available on how SCE&G operated its system to meet demands for a given day. Bill A. replied that they do not have all that information in one place. He noted that each plant maintains a record of they operate, however it is not all in one form. Bill A. also noted that they do provide some information to the Public Service Commission, however, the detail that the group has requested is not for the general public to have access to. Steve asked if the group could pick out particular days in order to receive information on, and Mike Waddell suggested that the past plant outage in May be used as an example. Bill noted that he had information on the past plant outage in June but not in May. Bill A. briefly reviewed the June 21 occurrence with the group and discussed the logic behind what particular plants were used. It was noted that for that occurrence, many plants on SCE&G's own system, including Saluda, were used and they did not have to call upon VACAR. Bill A. noted that since Saluda was being used in this emergency instance, that they had contacted VACAR to notify them that they were using their reserve and that it would probably not be available for the next hour to hour and a half. This was when SCE&G could purchase power on the market or bring other units online. Steve asked if SCE&G was required to first expend all of their resources before VACAR was called. Bill replied that they would have to first use their 200 in reserve before they called on VACAR or they had the option of meeting the need internally. Bill A. also added that there were advantages to meeting the needs internally.

The group noted that they had sufficiently discussed the first item and moved to the second question.

2. Provide a write-up on the reason why SCE&G operates their plants in the manner that they are operated.

   Response: Describing how the units are operated on any particular day provides information of only limited value, since operations on one day do not necessarily correlate to operations on future days. Actual operations of the plants are subject to an infinitely variable set of conditions. Nevertheless, the general process/protocol (Economic Dispatch) relied upon to determine which plants/units SCE&G at least "plans" to operate is reasonably consistent.

   Economic Dispatch is a generation planning tool employed faithfully at SCE&G. Twice each day, SCE&G engineers in the Economic Resource Commitment (ERC) group communicate with employees in the Transmission Services Operation Planning (OPS) group. These two functionally separate groups agree on hourly load forecasts for every hour of the coming 7 days.

   Once agreement upon the forecast has been reached, the ERC engineers develop hourly economic dispatch plans to match. The economic dispatch plans that are created project a mix of planned generation from SCE&G units as well as off-system purchases. Units and purchases are economically stacked in every hour (most economically favorable to least economically favorable) to create a plan the system can be controlled by to most economically serve its obligations – including the possibility of serving reserves.

   Once the Reliability Coordinators review the economic dispatch plan and make the changes deemed necessary to preserve reliability (remember, reliability trumps economics), the result is a constrained dispatch plan. For example, it may be more economical to generate from Plant A, but the Reliability Coordinators may determine it not to be reliable to do so from a transmission of energy perspective. Conversely, it may not be as economical to generate from Plant B, but it may be necessary to do so in order to serve load in a remote area. Saluda Hydro operations provide a perfect example of this. As one of SCE&G's most economical plants, it should always be generating from a purely cost-of-generation perspective. Nevertheless, because of reliability factors, it is kept off-line so that it can be available to serve as reserves if emergencies occur. Some

amount of generation must be available to respond to emergency reserve calls within the fifteen minute time period required by SCE&G's VACAR/SERC/NERC obligations.

The Reliability Coordinators hand-off the constrained dispatch plan to the System Controllers who then use it as a roadmap by which to operate the system. Inevitably, real life conditions do not exactly follow the assumptions the ERC, OPS, and Reliability Coordinators relied upon to create the plan, so the System Controllers make real time adjustments to operate the system.

The group began to discuss the dispatch plan and Randy Mahan explained that there were always real-life factors that could not be predicted. Steve inquired as to whether decisions to run certain plants were made for economical reasons. Bill A. noted that there are environmental issues to be considered that often trump the economic considerations. After this question was sufficiently answered the group moved on to discuss Item number 3.

3. Provide a write-up of how SCE&G uses the other plants in our system when Saluda is not available due to a scheduled outage of the whole plant or just one or two units. Last year could be a good example of the second half of this question since some of the units were not operational the entire year. What did you use for reserve when Unit 4 was not available?

   Response: The use of generating units other than Saluda's units for reserves depends on the specific situation. Over time we have seen a variety of situations in which Saluda's units become unavailable to serve reserve requirements. For example, Saluda's units may be unavailable because of maintenance activities at Saluda. Likewise, sometimes it is necessary that divers be in and around the towers. Operations are suspended during this time and the units are made unavailable for use to respond to reserves until this activity is completed. A more subtle example is presented when the units are already fully loaded, perhaps in preparation for inflows from a tropical storm or hurricane or during a time when lake levels are intentionally being reduced for dam or equipment maintenance. In the hurricane example, because the units are generating, they are not offline and available in 15 minutes which are both requirements for being counted as system reserves. And even if not fully loaded, to the extent the units are loaded, we cannot count that already-in-operation capacity towards our reserves obligation.

Most situations are controllable and planned ahead of time so that the generation plans satisfy both economic and constrained dispatch objectives. For example, if divers need to work on the towers, SCE&G makes sure the work is scheduled when generation from Fairfield Pumped Storage is not needed to serve load. This allows Fairfield Pumped Storage to be dedicated for reserves. Other controllable situations are scheduled maintenance and planned releases, assuming we don't have to deal with high flows down the Broad River at the same time. Canoeing for Kids is a good example of a planned release – it's typically scheduled on a Saturday during an expected low load period. For the 2006 event, Fairfield Pumped Storage was used to carry reserves.

When Saluda units fail or require maintenance and need to be taken off line, the only option is to carry reserves on Fairfield Pumped Storage or on a combination of Fairfield Pumped Storage and quick-start turbines. A combination of the two is most common because individually, they are problematic. Fairfield Pumped Storage has certain constraints such as limited operations when the Broad River is at or above 40,000 cfs. Further discussion about turbine operations appears below in response to questions 4 and 5.

A final alternative is to back down steam generation across multiple units. This is the least desirable method of carrying reserves as well as the most costly for SCE&G customers. Because of the slow response of coal-fired generating units, to achieve the full fifteen minutes reserve requirement obligation, multiple units must be backed off if they are to be replied upon. Also, when using these units, there is a real potential for unit trips. Nevertheless, even if a plan to rely on backing down coal fired generation were to be put in place, this would not fully meet the offline and available definition of VACAR/SERC/NERC. Rather, it more closely resembles a backed down and available situation.

In reference to the third item, Mike asked if SCE&G has enough capacity on its system to handle all of the current demands. Randy noted that they did have enough capacity, and explained that SCE&G does the best that they can to plan to have enough generation to meet the current needs as well as the expected growth. The group cited the construction of the new nuclear plant as an example.

There was brief discussion on the use of Fairfield Pumped Storage Facility. Steve inquired as to how it was used and whether there were certain times of the year in which all of the capacity at that plant was used. Bill replied there were times when the entirety of Fairfield's capacity was used. Karen Kustafik asked if drought conditions could affect

the use of Fairfield. Bill A. noted that drought conditions could effect the pumping to refill Monticello Reservoir because there is a minimum flow requirement at Parr. It was also discussed that Fairfield could not add to flooding if there was 40,000 or more cfs already in the Broad River.

The group also noted that item 4 (listed below) was sufficiently answered and moved to discuss item 5.

4. Provide a write-up of what SCE&G does in an emergency situation when Saluda is available. How is FFPS used in the equation to meet reserve? Does SCE&G use any other plants on our system to meet this reserve, if so which ones are used? Is Saluda always the first plant used during an emergency? Is Saluda the last plant used in an emergency?

   Response: Fairfield Pumped Storage may be available if a base load or other currently generating unit trips. However, if the limited volume of water in Fairfield already is included in the generating plan to serve load later in the day, it may not be used to fulfill the Saluda mission for that day, i.e. to meet a reserves call. At other times however, even though Fairfield Pumped Storage may be planned for later use, if loads turn out not to be as high as forecasted, FFPS may be pressed into service to meet the emergency need. System Controllers must also consider the forecasted need for Fairfield Pumped Storage for the next day, as there may be a need to replenish the water supply for the upcoming day's use. While pumping back, obviously, FFPS cannot be counted on to supply reserves. Finally, there are flooding constraints that can take Fairfield Pumped Storage out of the picture all together. Flows equal to or greater than 40,000 cfs in the Broad River render FFPS unavailable for operation in the generating mode. As the system changes throughout the day, multiple factors continually must be considered. Dependence on a single facility for reserves is not prudent; flexibility of reserve sources is crucial for reliability.

   In addition to Fairfield Pumped Storage & Saluda Hydro, the other plants normally used for reserves are the quick-start turbines. Those are Urquhart Unit 4 and Parr units 1, 2, 3, & 4. Together they can generate about 108 MWs.

   Saluda is not always the first plant used to serve reserves, nor is it always the last. As described above, there are a variety of factors to consider in determining which unit should be called upon to meet reserves.

5. How does SCE&G use the gas turbines on our system to meet reserve? Why does SCE&G not use them more than we do now? When does SCE&G use the gas turbines in general, peaking, base load, etc.? How are the gas turbines used, are they started and run for a long period of time or just a few hours a day; started and run just to meet a peak demand then shut off?

   Response: See the responses to Questions 2, 3, & 4 above. Gas turbines are used to carry reserves in limited situations because they are not as reliable in meeting the strict NERC 15 minute requirements as Fairfield Pumped Storage and Saluda. Thus they are not used as often.

   In general, gas turbines are used in peaking situations and normally run for very short periods of time and then shut off. They are always brought on after all steam units and most of Fairfield Pumped Storage is loaded. They are the least economical generation units and fall very late in the economic dispatch stack. Even though they are not as economical, SCE&G still runs them as peaking plants to serve load while it keeps Saluda off line for reserves. Were SCE&G to use turbines and part of Fairfield Pumped Storage for reserves, then to replace their peaking capacity, Saluda would have to be used as a peaking plant in their stead. This would mean Saluda would be used much more frequently than it is now.

While discussing item 5, Patrick Moore noted that during relicensing the possibility exists that some of the studies being done will produce data that would negate SCE&G's ability to use Saluda for reserve. He continued to ask what would be done for reserve if Saluda is not available. Tom Eppink noted that SCE&G is required to, and currently, looking at all options. He continued to note that this data will be shared with the group as soon as it is ready. Bill A. added that they hope to have a presentation ready sometime in September. Bill A. noted that they would also like to look at meeting environmental requirements by upgrading the units themselves. He explained that they are looking at upgrading the units with more efficient runners.

The group moved to item 6

6. Please provide the date, time, and MW that SCE&G was requested to provide reserve power during 2005. Provide the reason for the reserve usage, i.e. called by other utility, to meet our own emergency situation, etc. if the information is available. Which plants on the SCE&G system were used to meet the reserve request?

Response: Reports that SCE&G compiles regarding reserves operations have sensitive information belonging to companies other than SCE&G. What can be provided without violating those confidences follows. SCE&G played a role as part of the VACAR Reserve Sharing Group Agreement on 9 occasions during 2005. On 6 of those occasions SCE&G called on reserves from its VACAR Reserve Sharing Group partners. On the other 3 occasions SCE&G supplied reserves to other companies. That makes a total of 9 Reserve Sharing Group events in which SCE&G participated. Except for the information it has shared over the past couple of years (and continues to publish) regarding its operation of Saluda to meet reserve requirements, SCE&G has not compiled reports on its use of Saluda for internal reserve needs.

Steve proposed that the stakeholders choose a certain date that SCE&G could then find out more information on what plants were used and why. Bill A. replied that the situation varies on each day and that he does not believe the information is kept in such detail all in one place. Steve also noted that he believed that there would be questions in the upcoming RCG about why some of this information is kept confidential. Bill A. noted that they would have an attorney present to explain this to the group. Bill A. also noted that he would have Lee Xanthakos come to the next RCG meeting in an effort to try to answer some of the groups questions about how the system was run on certain days. A homework item for the stakeholders was to pick out dates they were interested in and they would be sent to Lee prior to the meeting.

Bill Marshall also noted that he was interested in knowing the Megawatts in percent that were used during the 9 Reserve Sharing Group events as well as the flows in the river during those instances.

The group began to discuss item number 7.

7. Provide a write-up of how SCE&G determines when and at what rate to lower Lake Murray during the annual fall drawdown?

   Response: SCE&G considers several factors in determining the appropriate target lake elevation during fall drawdown include current lake elevation, the need to gradually drawdown over several months, expectations and planning for "normal" winter and spring rainfall, predicted or possible severe weather conditions (such as the possibility of tropical storms or hurricanes), and the need and ability to maintain reserves during and after drawdown. Rapid drawdown of the lake always raises the specter of potential detriment to the stability of the dam. This is

a major reason that SCE&G plans the annual drawdown to occur over several months. The other major issue to consider is Saluda Hydro's availability for reserve generation as discussed in the response to Question 3. To the extent Saluda is operating for other reasons, it cannot be counted as reserves in response to its VACAR/SERC/NERC reserves obligations.

Lake Murray is not a flood storage reservoir and must be operated to allow the lake level to be lowered through plant generation without the use of the emergency spillway gates. As the name implies, the spillway gates are for emergency use, to address circumstances where inflow or expected inflow is greater than the discharge capacity of the plant at a time when the lake level is close to the normal maximum pool elevation. SCE&G goes to great pains to manage the lake level so this situation does not occur. A target water level reduction, usually one to two feet per month, has been considered a "typical" drawdown rate from late August through December in anticipation of normal rainfall from January through April of the following year. Generation during this drawdown period is performed as prudently as possible taking into account the issues described in Question 2

Statistically, the highest probability of a hurricane affecting the Saluda River Basin is in the month of September. Thus the lake level drawdown typically will start around the end of August. If there is a possibility of the approach of a tropical storm or hurricane to the Saluda River Basin area, which may appear to require lowering the lake level in anticipation of the storm, SCE&G will use a Flow Forecasting Model that evaluates data from the National Weather Service and United States Geological Survey to predict the elevation of Lake Murray under various discharge scenarios. Based on the results of specific model analyses, SCE&G will then lower the lake level as necessary to keep the level safely below elevation 360' to maintain compliance with our FERC license. Although hurricane season ends in November, a typical lake level drawdown continues through the end of December in anticipation of winter and spring rains as noted above.

Steve asked what criteria SCE&G uses to determine what level the lake should be at any given time during the fall and winter to ensure that flood gates would not have to be used Bill A. noted that it greatly depends on the weather patterns. He explained that Jim Landreth has been working with the lake groups to keep the level up as high as possible for as long as possible. Bill A explained that SCE&G's current policy is to use

information from the National Weather Service in its Flow Forecasting Model to determine the need to lower the lake in the event of an approaching hurricane or tropical storm. Bill A indicated that at this time SCE&G does lower the lake anticipating heavy rains in January and Spring. He also added that water balance is part of the operations model, and until they receive all of the information, SCE&G is working on keeping the lake level as high as possible, while still being prepared for hurricanes and tropical storms.

On a separate topic, Bill Marshall noted that he understood the steep increase in cfs under emergency situations but inquired as to why there were such steep rises for planned releases. Bill A. noted that there were several reasons behind this, one being that they needed to try to use the water in an economical manner, as well as having the system back offline and ready for use as reserve. Bill A. noted that as part of their last settlement agreement meeting with SCCCL, they were looking into having a more gradual release for planned releases, however, in an emergency situation there will need to be an immediate release.

Question 8 was skipped (listed below) and the group moved to question 9.

8. Provide the times in which the Broad River flows were at or greater than 40,000 cfs in 2005.

   Response: The SCE&G system dispatchers use three gages (Broad River near Carlisle (02156500), Tyger River near Delta (02160105), and Enoree River at Whitmire (02160700)) above Parr Hydro to determine when flows are **approaching** 40,000 cfs on the Broad River. The dispatchers will add the flows of these three gages to calculate the total flow in the Broad River at Fairfield Pumped Storage. To determine how many times the Broad River actually achieved flows equal to or in excess of 40,000 cfs, for this report we will look at the Broad River at Alston Gage (02161000) which is downstream of Parr Hydro on the Broad River. When the flows are at or above 40,000 cfs at the Alston Gage, Fairfield Pumped Storage will already have been taken off line in accordance with our FERC license. The attached spreadsheet lists the times the Broad River exceeded 40,000 cfs based on the Broad River at Alston Gage. The items highlighted (in yellow) show the number of times and percent of time for each month that the Broad River was at or above 40,000 cfs. Below are the exact dates/times in 2005 that the Broad River was at or above 40,000 cfs based on the Broad River at Alston Gage. SCE&G cannot validate and does not vouch for the accuracy of the data provided by the USGS gage.

March 29 - From 4 pm to 12 am
March 30 - From 1 am to 10 pm
June 2 - From 1 pm to 10 pm
October 8 - From 6 pm to 10 pm
October 9 - From 12 pm to 12 am
October 10 - From 1 am to 4 am

9. Provide a range of costs for MWHs of generation that was purchased on the open market for the last two years (2004 & 2005).

Response: This data is business confidential and market sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Should power marketers have knowledge of these critical price points, they could adjust their bids accordingly. SCE&G could then be forced to buy energy at less favorable rates. Ultimately, SCE&G system consumers would receive less benefit from energy sales and pay a higher cost for purchased energy if market participants know SCE&G's purchasing history. Once information of this nature is disclosed to the market, there is no practical way to undo the damage to SCE&G and its customers.

Broad River at Alston Gage (02161000) Flows

			High		
			.00 Flows below 40,000 cfs	1.00 Flows equal to or greater than 40,000 cfs	Total
MONTH	Jan	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
	Feb	Count	672	0	672

	% within MONTH	100.0%	.0%	100.0%
	% within High	7.7%	.0%	7.7%
	% of Total	7.7%	.0%	7.7%
Mar	Count	731	13	744
	% within MONTH	98.3%	1.7%	100.0%
	% within High	8.4%	28.9%	8.5%
	% of Total	8.3%	.1%	8.5%
Apr	Count	720	0	720
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.3%	.0%	8.2%
	% of Total	8.2%	.0%	8.2%
May	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Jun	Count	710	10	720
	% within MONTH	98.6%	1.4%	100.0%
	% within High	8.1%	22.2%	8.2%
	% of Total	8.1%	.1%	8.2%
Jul	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Aug	Count	744	0	744
	% within	100.0%	.0%	100.0%

		MONTH			
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
	Sep	Count	720	0	720
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.3%	.0%	8.2%
		% of Total	8.2%	.0%	8.2%
	Oct	Count	722	22	744
		% within MONTH	97.0%	3.0%	100.0%
		% within High	8.3%	48.9%	8.5%
		% of Total	8.2%	.3%	8.5%
	Nov	Count	720	0	720
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.3%	.0%	8.2%
		% of Total	8.2%	.0%	8.2%
	Dec	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
Total		Count	8715	45	8760
		% within MONTH	99.5%	.5%	100.0%
		% within High	100.0%	100.0%	100.0%
		% of Total	99.5%	.5%	100.0%

In conclusion, Patrick Moore asked if there was any way that the group could be provided with a high and a low cost for power paid over the last 10 years with no particular time sequence attached to it. Bill A. noted that he would ask about this. Mike also asked if Bill A. could send him the FERC form for the other ¾ of 2005. The group noted the homework assignments and adjourned.

Discussions that occurred after the meeting between Bill Argentieri and Steve Bell:

August 2, 2006 – telephone conversation

Subsequent to the July 11, 2006 Generation Review meeting, Steve Bell and Bill Argentieri had a discussion in an attempt to clarify Response No. 7 on SCE&G's June 14, 2006 email, how does SCE&G determine when and at what rate to lower Lake Murray during the annual fall drawdown. The following are details of our conversation.

Steve was interested in more details of how SCE&G determines what target elevations are aimed for in the fall drawdown months. Bill explained that normally SCE&G will attempt to lower the lake approximately 1 – 2 feet a month starting in late August/ early September in an attempt to target elevation 350 to 352 by the end of December. This is for several reasons; first to provide storage area in Lake Murray in the event of a tropical storm or hurricane which if it is going to occur, typically occurs in the late August to end of September time of year in our watershed basin. Second, this scenario provides for greater flexibility to keep Saluda for reserves during longer periods of each month. We will drawdown the lake in the early part of the month to allow for reserve use in the later part of the month. Third, the idea of lowering Lake Murray to the 350 – 352 range by the end of December provides our system operators with better control of inflows during the late winter and early spring rainy season (January – April). This also provides SCE&G a better opportunity to manage the lake level without having to generate as often during the spring months. In 2005, similar to what we have tried other years in the past, Jim Landreth requested that the minimum lake level during the drawdown not go below elevation 354. We did accomplish this, but because 2005 was more of a typical rain year, we had to use Saluda Hydro to generate more throughout the spring and summer months. This created two situations that we are discussing right now in the Safety RCG and Fish & Wildlife RCG. The Safety RCG is concerned about more generation during the summer months which creates the need for more safety warning systems along the lower Saluda River. The Fish and Wildlife RCG is concerned with the potential to generate more with Unit 5 from June through August when the DO in the lake is the low.

I will obtain a copy of each week from January 1, 2005 through December 31, 2005.

Response: The data requested regarding prior operation of all plants on our system is not maintained in the manner requested. We do not keep a weekly aggregate of generation for our plants. Thus, this information is not readily available. In addition, generation information at this level of detail is business-confidential and market-sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Once information of this nature is disclosed to the market, there is no practical way to undo damage to SCE&G and its customers.

Nevertheless, in an effort to give you all available non-confidential material, attached are excerpts from the FERC Form - 1 annual filing made by SCE&G at the Federal Energy Regulatory Commission for the calendar year ending December 31, 2005. These excerpts include the annual generation for each of SCE&G's facilities.

After the group reviewed the first question Steve Bell asked if records were available on how SCE&G operated its system to meet demands for a given day. Bill A. replied that they do not have all that information in one place. He noted that each plant maintains a record of they operate, however it is not all in one form. Bill A. also noted that they do provide some information to the Public Service Commission, however, the detail that the group has requested is not for the general public to have access to. Steve asked if the group could pick out particular days in order to receive information on, and Mike Waddell suggested that the past plant outage in May be used as an example. Bill noted that he had information on the past plant outage in June but not in May. Bill A. briefly reviewed the June 21 occurrence with the group and discussed the logic behind what particular plants were used. It was noted that for that occurrence, many plants on SCE&G's own system, including Saluda, were used and they did not have to call upon VACAR. Bill A. noted that since Saluda was being used in this emergency instance, that they had contacted VACAR to notify them that they were using their reserve and that it would probably not be available for the next hour to hour and a half. This was when SCE&G could purchase power on the market or bring other units online. Steve asked if SCE&G was required to first expend all of their resources before VACAR was called. Bill replied that they would have to first use their 200 in reserve before they called on VACAR or they had the option of meeting the need internally. Bill A. also added that there were advantages to meeting the needs internally.

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The group noted that they had sufficiently discussed the first item and moved to the second question.

2. Provide a write-up on the reason why SCE&G operates their plants in the manner that they are operated.

   Response: Describing how the units are operated on any particular day provides information of only limited value, since operations on one day do not necessarily correlate to operations on future days. Actual operations of the plants are subject to an infinitely variable set of conditions. Nevertheless, the general process/protocol (Economic Dispatch) relied upon to determine which plants/units SCE&G at least "plans" to operate is reasonably consistent.

   Economic Dispatch is a generation planning tool employed faithfully at SCE&G. Twice each day, SCE&G engineers in the Economic Resource Commitment (ERC) group communicate with employees in the Transmission Services Operation Planning (OPS) group. These two functionally separate groups agree on hourly load forecasts for every hour of the coming 7 days.

   Once agreement upon the forecast has been reached, the ERC engineers develop hourly economic dispatch plans to match. The economic dispatch plans that are created project a mix of planned generation from SCE&G units as well as off-system purchases. Units and purchases are economically stacked in every hour (most economically favorable to least economically favorable) to create a plan the system can be controlled by to most economically serve its obligations – including the possibility of serving reserves.

   Once the Reliability Coordinators review the economic dispatch plan and make the changes deemed necessary to preserve reliability (remember, reliability trumps economics), the result is a constrained dispatch plan. For example, it may be more economical to generate from Plant A, but the Reliability Coordinators may determine it not to be reliable to do so from a transmission of energy perspective. Conversely, it may not be as economical to generate from Plant B, but it may be necessary to do so in order to serve load in a remote area. Saluda Hydro operations provide a perfect example of this. As one of SCE&G's most economical plants, it should always be generating from a purely cost-of-generation perspective. Nevertheless, because of reliability factors, it is kept off-line so that it can be available to serve as reserves if emergencies occur. Some

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amount of generation must be available to respond to emergency reserve calls within the fifteen minute time period required by SCE&G's VACAR/SERC/NERC obligations.

The Reliability Coordinators hand-off the constrained dispatch plan to the System Controllers who then use it as a roadmap by which to operate the system. Inevitably, real life conditions do not exactly follow the assumptions the ERC, OPS, and Reliability Coordinators relied upon to create the plan, so the System Controllers make real time adjustments to operate the system.

The group began to discuss the dispatch plan and Randy Mahan explained that there were always real-life factors that could not be predicted. Steve inquired as to whether decisions to run certain plants were made for economical reasons. Bill A. noted that there are environmental issues to be considered that often trump the economic considerations. After this question was sufficiently answered the group moved on to discuss Item number 3.

3. Provide a write-up of how SCE&G uses the other plants in our system when Saluda is not available due to a scheduled outage of the whole plant or just one or two units. Last year could be a good example of the second half of this question since some of the units were not operational the entire year. What did you use for reserve when Unit 4 was not available?

   Response: The use of generating units other than Saluda's units for reserves depends on the specific situation. Over time we have seen a variety of situations in which Saluda's units become unavailable to serve reserve requirements. For example, Saluda's units may be unavailable because of maintenance activities at Saluda. Likewise, sometimes it is necessary that divers be in and around the towers. Operations are suspended during this time and the units are made unavailable for use to respond to reserves until this activity is completed. A more subtle example is presented when the units are already fully loaded, perhaps in preparation for inflows from a tropical storm or hurricane or during a time when lake levels are intentionally being reduced for dam or equipment maintenance. In the hurricane example, because the units are generating, they are not offline and available in 15 minutes which are both requirements for being counted as system reserves. And even if not fully loaded, to the extent the units are loaded, we cannot count that already-in-operation capacity towards our reserves obligation.

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Most situations are controllable and planned ahead of time so that the generation plans satisfy both economic and constrained dispatch objectives. For example, if divers need to work on the towers, SCE&G makes sure the work is scheduled when generation from Fairfield Pumped Storage is not needed to serve load. This allows Fairfield Pumped Storage to be dedicated for reserves. Other controllable situations are scheduled maintenance and planned releases, assuming we don't have to deal with high flows down the Broad River at the same time. Canoeing for Kids is a good example of a planned release – it's typically scheduled on a Saturday during an expected low load period. For the 2006 event, Fairfield Pumped Storage was used to carry reserves.

When Saluda units fail or require maintenance and need to be taken off line, the only option is to carry reserves on Fairfield Pumped Storage or on a combination of Fairfield Pumped Storage and quick-start turbines. A combination of the two is most common because individually, they are problematic. Fairfield Pumped Storage has certain constraints such as limited operations when the Broad River is at or above 40,000 cfs. Further discussion about turbine operations appears below in response to questions 4 and 5.

A final alternative is to back down steam generation across multiple units. This is the least desirable method of carrying reserves as well as the most costly for SCE&G customers. Because of the slow response of coal-fired generating units, to achieve the full fifteen minutes reserve requirement obligation, multiple units must be backed off if they are to be replied upon. Also, when using these units, there is a real potential for unit trips. Nevertheless, even if a plan to rely on backing down coal fired generation were to be put in place, this would not fully meet the offline and available definition of VACAR/SERC/NERC. Rather, it more closely resembles a backed down and available situation.

In reference to the third item, Mike asked if SCE&G has enough capacity on its system to handle all of the current demands. Randy noted that they did have enough capacity, and explained that SCE&G does the best that they can to plan to have enough generation to meet the current needs as well as the expected growth. The group cited the construction of the new nuclear plant as an example.

There was brief discussion on the use of Fairfield Pumped Storage Facility. Steve inquired as to how it was used and whether there were certain times of the year in which all of the capacity at that plant was used. Bill replied there were times when the entireity of Fairfild's capacity was used. Karen Kustafik asked if drought conditions could affect

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the use of Fairfield. Bill A. noted that drought conditions could effect the pumping to refill Monticello Reservoir because there is a minimum flow requirement at Parr. It was also discussed that Fairfield could not add to flooding if there was 40,000 or more cfs already in the Broad River.

The group also noted that item 4 (listed below) was sufficiently answered and moved to discuss item 5.

4. Provide a write-up of what SCE&G does in an emergency situation when Saluda is available. How is FFPS used in the equation to meet reserve? Does SCE&G use any other plants on our system to meet this reserve, if so which ones are used? Is Saluda always the first plant used during an emergency? Is Saluda the last plant used in an emergency?

   Response: Fairfield Pumped Storage may be available if a base load or other currently generating unit trips. However, if the limited volume of water in Fairfield already is included in the generating plan to serve load later in the day, it may not be used to fulfill the Saluda mission for that day, i.e. to meet a reserves call. At other times however, even though Fairfield Pumped Storage may be planned for later use, if loads turn out not to be as high as forecasted, FFPS may be pressed into service to meet the emergency need. System Controllers must also consider the forecasted need for Fairfield Pumped Storage for the next day, as there may be a need to replenish the water supply for the upcoming day's use. While pumping back, obviously, FFPS cannot be counted on to supply reserves. Finally, there are flooding constraints that can take Fairfield Pumped Storage out of the picture all together. Flows equal to or greater than 40,000 cfs in the Broad River render FFPS unavailable for operation in the generating mode. As the system changes throughout the day, multiple factors continually must be considered. Dependence on a single facility for reserves is not prudent; flexibility of reserve sources is crucial for reliability.

   In addition to Fairfield Pumped Storage & Saluda Hydro, the other plants normally used for reserves are the quick-start turbines. Those are Urquhart Unit 4 and Parr units 1, 2, 3, & 4. Together they can generate about 108 MWs.

   Saluda is not always the first plant used to serve reserves, nor is it always the last. As described above, there are a variety of factors to consider in determining which unit should be called upon to meet reserves.

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5. How does SCE&G use the gas turbines on our system to meet reserve? Why does SCE&G not use them more than we do now? When does SCE&G use the gas turbines in general, peaking, base load, etc.? How are the gas turbines used, are they started and run for a long period of time or just a few hours a day; started and run just to meet a peak demand then shut off?

   Response: See the responses to Questions 2, 3, & 4 above. Gas turbines are used to carry reserves in limited situations because they are not as reliable in meeting the strict NERC 15 minute requirements as Fairfield Pumped Storage and Saluda. Thus they are not used as often.

   In general, gas turbines are used in peaking situations and normally run for very short periods of time and then shut off. They are always brought on after all steam units and most of Fairfield Pumped Storage is loaded. They are the least economical generation units and fall very late in the economic dispatch stack. Even though they are not as economical, SCE&G still runs them as peaking plants to serve load while it keeps Saluda off line for reserves. Were SCE&G to use turbines and part of Fairfield Pumped Storage for reserves, then to replace their peaking capacity, Saluda would have to be used as a peaking plant in their stead. This would mean Saluda would be used much more frequently than it is now.

While discussing item 5, Patrick Moore noted that during relicensing the possibility exists that some of the studies being done will produce data that would negate SCE&G's ability to use Saluda for reserve. He continued to ask what would be done for reserve if Saluda is not available. Tom Eppink noted that SCE&G is required to, and currently, looking at all options. He continued to note that this data will be shared with the group as soon as it is ready. Bill A. added that they hope to have a presentation ready sometime in September. Bill A. noted that they would also like to look at meeting environmental requirements by upgrading the units themselves. He explained that they are looking at upgrading the units with more efficient runners.

The group moved to item 6

6. Please provide the date, time, and MW that SCE&G was requested to provide reserve power during 2005. Provide the reason for the reserve usage, i.e. called by other utility, to meet our own emergency situation, etc. if the information is available. Which plants on the SCE&G system were used to meet the reserve request?

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Response: Reports that SCE&G compiles regarding reserves operations have sensitive information belonging to companies other than SCE&G. What can be provided without violating those confidences follows. SCE&G played a role as part of the VACAR Reserve Sharing Group Agreement on 9 occasions during 2005. On 6 of those occasions SCE&G called on reserves from its VACAR Reserve Sharing Group partners. On the other 3 occasions SCE&G supplied reserves to other companies. That makes a total of 9 Reserve Sharing Group events in which SCE&G participated. Except for the information it has shared over the past couple of years (and continues to publish) regarding its operation of Saluda to meet reserve requirements, SCE&G has not compiled reports on its use of Saluda for internal reserve needs.

Steve proposed that the stakeholders choose a certain date that SCE&G could then find out more information on what plants were used and why. Bill A. replied that the situation varies on each day and that he does not believe the information is kept in such detail all in one place. Steve also noted that he believed that there would be questions in the upcoming RCG about why some of this information is kept confidential. Bill A. noted that they would have an attorney present to explain this to the group. Bill A. also noted that he would have Lee Xanthakos come to the next RCG meeting in an effort to try to answer some of the groups questions about how the system was run on certain days. A homework item for the stakeholders was to pick out dates they were interested in and they would be sent to Lee prior to the meeting.

Bill Marshall also noted that he was interested in knowing the Megawatts in percent that were used during the 9 Reserve Sharing Group events as well as the flows in the river during those instances.

The group began to discuss item number 7.

7. Provide a write-up of how SCE&G determines when and at what rate to lower Lake Murray during the annual fall drawdown?

   Response: SCE&G considers several factors in determining the appropriate target lake elevation during fall drawdown include current lake elevation, the need to gradually drawdown over several months, expectations and planning for "normal" winter and spring rainfall, predicted or possible severe weather conditions (such as the possibility of tropical storms or hurricanes), and the need and ability to maintain reserves during and after drawdown. Rapid drawdown of the lake always raises the specter of potential detriment to the stability of the dam. This is

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a major reason that SCE&G plans the annual drawdown to occur over several months. The other major issue to consider is Saluda Hydro's availability for reserve generation as discussed in the response to Question 3. To the extent Saluda is operating for other reasons, it cannot be counted as reserves in response to its VACAR/SERC/NERC reserves obligations.

Lake Murray is not a flood storage reservoir and must be operated to allow the lake level to be lowered through plant generation without the use of the emergency spillway gates. As the name implies, the spillway gates are for emergency use, to address circumstances where inflow or expected inflow is greater than the discharge capacity of the plant at a time when the lake level is close to the normal maximum pool elevation. SCE&G goes to great pains to manage the lake level so this situation does not occur. A target water level reduction, usually one to two feet per month, has been considered a "typical" drawdown rate from late August through December in anticipation of normal rainfall from January through April of the following year. Generation during this drawdown period is performed as prudently as possible taking into account the issues described in Question 2

Statistically, the highest probability of a hurricane affecting the Saluda River Basin is in the month of September. Thus the lake level drawdown typically will start around the end of August. If there is a possibility of the approach of a tropical storm or hurricane to the Saluda River Basin area, which may appear to require lowering the lake level in anticipation of the storm, SCE&G will use a Flow Forecasting Model that evaluates data from the National Weather Service and United States Geological Survey to predict the elevation of Lake Murray under various discharge scenarios. Based on the results of specific model analyses, SCE&G will then lower the lake level as necessary to keep the level safely below elevation 360' to maintain compliance with our FERC license. Although hurricane season ends in November, a typical lake level drawdown continues through the end of December in anticipation of winter and spring rains as noted above.

Steve asked what criteria SCE&G uses to determine what level the lake should be at any given time during the fall and winter to ensure that flood gates would not have to be used. Bill A. noted that it greatly depends on the weather patterns. He explained that Jim Landreth has been working with the lake groups to keep the level up as high as possible for as long as possible. Bill A explained that SCE&G's current policy is to use

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information from the National Weather Service in its Flow Forecasting Model to determine the need to lower the lake in the event of an approaching hurricane or tropical storm. Bill A indicated that at this time SCE&G does lower the lake anticipating heavy rains in January and Spring. He also added that water balance is part of the operations model, and until they receive all of the information, SCE&G is working on keeping the lake level as high as possible, while still being prepared for hurricanes and tropical storms.

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On a separate topic, Bill Marshall noted that he understood the steep increase in cfs under emergency situations but inquired as to why there were such steep rises for planned releases. Bill A. noted that there were several reasons behind this, one being that they needed to try to use the water in an economical manner, as well as having the system back offline and ready for use as reserve. Bill A. noted that as part of their last settlement agreement meeting with SCCCL, they were looking into having a more gradual release for planned releases, however, in an emergency situation there will need to be an immediate release.

Question 8 was skipped (listed below) and the group moved to question 9.

8. Provide the times in which the Broad River flows were at or greater than 40,000 cfs in 2005.

   Response: The SCE&G system dispatchers use three gages (Broad River near Carlisle (02156500), Tyger River near Delta (02160105), and Enoree River at Whitmire (02160700)) above Parr Hydro to determine when flows are **approaching** 40,000 cfs on the Broad River. The dispatchers will add the flows of these three gages to calculate the total flow in the Broad River at Fairfield Pumped Storage. To determine how many times the Broad River actually achieved flows equal to or in excess of 40,000 cfs, for this report we will look at the Broad River at Alston Gage (02161000) which is downstream of Parr Hydro on the Broad River. When the flows are at or above 40,000 cfs at the Alston Gage, Fairfield Pumped Storage will already have been taken off line in accordance with our FERC license. The attached spreadsheet lists the times the Broad River exceeded 40,000 cfs based on the Broad River at Alston Gage. The items highlighted (in yellow) show the number of times and percent of time for each month that the Broad River was at or above 40,000 cfs. Below are the exact dates/times in 2005 that the Broad River was at or above 40,000 cfs based on the Broad River at Alston Gage. SCE&G cannot validate and does not vouch for the accuracy of the data provided by the USGS gage.

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March 29 - From 4 pm to 12 am
March 30 - From 1 am to 10 pm
June 2 - From 1 pm to 10 pm
October 8 - From 6 pm to 10 pm
October 9 - From 12 pm to 12 am
October 10 - From 1 am to 4 am

9. Provide a range of costs for MWHs of generation that was purchased on the open market for the last two years (2004 & 2005).

   Response: This data is business confidential and market sensitive information. Disclosure of this information could result in substantial damage to SCE&G's position as both a purchaser and seller of energy in unregulated regional energy markets. Should power marketers have knowledge of these critical price points, they could adjust their bids accordingly. SCE&G could then be forced to buy energy at less favorable rates. Ultimately, SCE&G system consumers would receive less benefit from energy sales and pay a higher cost for purchased energy if market participants know SCE&G's purchasing history. Once information of this nature is disclosed to the market, there is no practical way to undo the damage to SCE&G and its customers.

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Broad River at Alston Gage (02161000) Flows

			High		
			.00 Flows below 40,000 cfs	1.00 Flows equal to or greater than 40,000 cfs	Total
MONTH	Jan	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
	Feb	Count	672	0	672
		% within MONTH	100.0%	.0%	100.0%
		% within High	7.7%	.0%	7.7%
		% of Total	7.7%	.0%	7.7%
	Mar	Count	731	13	744
		% within MONTH	98.3%	1.7%	100.0%
		% within High	8.4%	28.9%	8.5%
		% of Total	8.3%	.1%	8.5%
	Apr	Count	720	0	720
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.3%	.0%	8.2%
		% of Total	8.2%	.0%	8.2%
	May	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%

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	% of Total	8.5%	.0%	8.5%
Jun	Count	710	10	720
	% within MONTH	98.6%	1.4%	100.0%
	% within High	8.1%	22.2%	8.2%
	% of Total	8.1%	.1%	8.2%
Jul	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Aug	Count	744	0	744
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.5%	.0%	8.5%
	% of Total	8.5%	.0%	8.5%
Sep	Count	720	0	720
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.3%	.0%	8.2%
	% of Total	8.2%	.0%	8.2%
Oct	Count	722	22	744
	% within MONTH	97.0%	3.0%	100.0%
	% within High	8.3%	48.9%	8.5%
	% of Total	8.2%	.3%	8.5%
Nov	Count	720	0	720
	% within MONTH	100.0%	.0%	100.0%
	% within High	8.3%	.0%	8.2%
	% of Total	8.2%	.0%	8.2%

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	Dec	Count	744	0	744
		% within MONTH	100.0%	.0%	100.0%
		% within High	8.5%	.0%	8.5%
		% of Total	8.5%	.0%	8.5%
Total		Count	8715	45	8760
		% within MONTH	99.5%	.5%	100.0%
		% within High	100.0%	100.0%	100.0%
		% of Total	99.5%	.5%	100.0%

In conclusion, Patrick Moore asked if there was any way that the group could be provided with a high and a low cost for power paid over the last 10 years with no particular time sequence attached to it. Bill A. noted that he would ask about this. Mike also asked if Bill A. could send him the FERC form for the other ¾ of 2005. The group noted the homework assignments and adjourned.

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Stacia Hoover

From: Alison Guth
Sent: Wednesday, May 24, 2006 4:40 PM
To: Wenonah Haire; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Andy Miller; Bertina Floyd; BARGENTIERI@scana.com; Bill Cutler; Bill East; Bill Green (BGreen@smeinc.com); Bill Hulslander; Bill Marshall; Bill Mathias; Bob Olsen; Bob Seibels (bseibels@yahoo.com); Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Cam Littlejohn; Chad Long; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Craig Stow; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dell Isham; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Fetner; Edward Schnepel; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gerrit Jobsis (CCL); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); Jay Robinson; Jeanette Wells; Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; John and Rob Altenberg; John Davis (johned44@bellsouth.net); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Malcolm Leaphart; Marianne Zajac; Mark Leao; Marty Phillips; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Prescott Brownell; Ralph Crafton; Randal Shealy; RMAHAN@scana.com; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener (SKEENER@sc.rr.com); Robert Lavisky; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sam Drake; Sandra Reinhardt; Sean Norris; Shane Boring; Stanley Yalicki; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Theresa Thom; Tim Flach; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Brooks; Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Mike Schimpff; Brandon Kulik; Marty Phillips
Subject: Final Meeting Notes for the Generation Review TWC

Hello all,

Attached are the final meeting notes from the Generation Review TWC Meeting on April 6, 2006. I am still waiting on a couple comments on the notes from the Safety and Operations RCG meeting that same day, but the final copy should be issued soon. Thanks and take care, Alison

2006-04-06 final Meeting Minut...

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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
GENERATION REVIEW TWC

Saluda Shoals Park
April 6, 2006

5-24-06 final acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Bill Argentieri, SCE&G
Bill Marshall, DNR, LSSRAC
Michael Waddell, TU
Patrick Moore, SCCCL, Am. Rivers
Steve Bell, Lake Watch
Theresa Thom, Congaree National Park
Jennifer O'Rourke, SC Wildlife Federation
Bill Cutler, Lake Watch, LM Homeowners Coalition

DATE: April 6, 2006

These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

HOMEWORK

Provide response to list of questions from TWC participants
Bill Argentieri

DISCUSSION

After the April 6th Combined Safety and Recreation meeting, the TWC members began the technical meeting. Bill Argentieri opened the meeting by asking what info the group felt that it needed and he would check to see if that information was available. Patrick Moore noted that he would like to see information on the operation of Saluda from a wet year, a dry year, and a normal year. He also noted that it would be beneficial to obtain operations information from a normal, wet, and dry year from the time in which Saluda was used for peaking.

Steve Bell asked if weekly generation reports were available for all plants on SCE&G's system. Bill Argentieri replied that they were available for Saluda because they are being sent out as part of the settlement agreement. Steve further explained that they would like to see reports from the entire system in order to see if Saluda was run for reserve or for some other reason. Patrick further noted that he would like to see if Saluda truly was the last option for reserve. Mike Waddell explained that it was his interest to expand the range of options and to better grasp how the system operates.

The group began discussing what date ranges of information was needed. Mike Waddell suggested that the group begin by looking at information from January of 2005 to the following January, with the understanding that there may be more questions once the group is able to look at the information. Bill Argentieri explained that the generation reports alone would not explain why other plants were or were not operated. The group began to go over options for deciphering why a particular plant was run. Mike Waddell suggested looking at Broad River flows in order to see how many times it was flowing over 40,000 cfs.

Steve Bell noted that his goal for the committee would be to have a specific report that was part of the record and that other groups could refer to. The group also requested a round table discussion with Lee Xanthakos to discuss in more detail how he uses Saluda as well as the other facilities.

Bill Marshall mentioned that he also would be interested in learning different scenarios for the use of Saluda and Fairfield and asked if that would be a part of what was brought to the table in an alternatives analysis. Bill Argentieri replied that it was not a part of the alternative analysis which would look at the alternatives for replacing Saluda all together.

The group continued to discuss the uses of Saluda and Fairfield. Patrick Moore requested to see information on rate ranges for the purchase of power. Alan noted that this information could not be disseminated in the presence of Lee Xanthakos according to FERC guidelines.

Steve Bell noted that he would also like to see information on the drawdowns for hurricane season. He continued to explain that he would be interested to see what time of day or month SCE&G began to take the lake down, and to what level. Steve also asked what was done if there was an emergency downstream where someone's life was at risk, and if they could stop generation in that case. Bill Argentieri replied that they have received a call of that nature before and the generation was shut down.

After more brief discussion on the use of Saluda the group compiled a list of requested information. Bill noted that he would meet with Lee Xanthakos in order to compile the answers to these questions.

List of Requested Information:

- Weekly generation reports for all plants on SCE&G's system between January and December of 2005 (The group will start this process by looking at one weeks worth or information and decide what more is needed)

- Reasons why certain plants on the system were operated.
- Time periods during which Broad River flows were greater than 40,000 cfs
- How and when the gas turbines are used on the system
- How Fairfield is used
- Ranges of costs for the purchase of megawatt hours.
- Reserves that were requested in 2005 by other utilities and the amounts of megawatts that were called upon.
- How is it determined when and at what rate Lake Murray is lowered during the annual drawdown.

Stacia Hoover

From: Alison Guth
Sent: Friday, May 26, 2006 8:30 AM
To: Wenonah Haire; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Andy Miller; Bertina Floyd; BARGENTIERI@scana.com; Bill Cutler; Bill East; Bill Green (BGreen@smeinc.com); Bill Hulslander; Bill Marshall; Bill Mathias; Bob Olsen; Bob Seibels (bseibels@yahoo.com); Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Cam Littlejohn; Chad Long; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Craig Stow; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dell Isham; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Fetner; Edward Schnepel; Feleke Arega (aregaf@dnr.sc.gov); George Duke; Gerrit Jobsis (American Rivers); Gerrit Jobsis (CCL); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); Jay Robinson; Jeanette Wells; Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; John and Rob Altenberg; John Davis (johned44@bellsouth.net); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Malcolm Leaphart; Marianne Zajac; Mark Leao; Marty Phillips; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Prescott Brownell; Ralph Crafton; Randal Shealy; RMAHAN@scana.com; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener (SKEENER@sc.rr.com); Robert Lavisky; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sam Drake; Sandra Reinhardt; Sean Norris; Shane Boring; Stanley Yalicki; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Theresa Thom; Tim Flach; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Brooks; Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Mike Schimpff; Brandon Kulik; Marty Phillips
Subject: Final Meeting Notes - April 6th

Hello All,

Attached are the final meeting notes from the April 6th Operations and Safety Meeting. Thanks for all your comments.
Alison

2006-4-06 final Meeting Notes ...

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
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F: (803) 822-3183

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS & SAFETY RESOURCE CONSERVATION GROUPS COMBINED MEETING

Saluda Shoals Park
April 6, 2006

5-26-06 final acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Bill Argentieri, SCE&G
Bret Hoffman, Kleinschmidt Associates
Bud Badr, DNR
Feleke Arega, DNR
Dave Landis, Lake Murray Association
Karen Kustafik, Columbia Parks and Rec
Kristina Massey, Kleinschmidt Associates
Malcolm Leaphart, Trout Unlimited
Bill Marshall, DNR, LSSRAC
Gerrit Jobsis, American Rivers
George Duke, LM Homeowners Coalition
Guy Jones, River Runner
Michael Waddell, TU
Patrick Moore, SCCCL, Am. Rivers
Randy Mahan, SCANA Services
Ray Ammarell, SCE&G
Steve Bell, Lake Watch
Theresa Thom, Congaree National Park
Carvitas Fant, USC
Charlene Coleman, American Whitewater
Lee Barber, LMA
Kenneth Fox, LMA
Ed Schnepel, LMA
Jennifer O'Rourke, SC Wildlife Federation
Tony Bebber, SCPRT
Suzanne Rhodes, SC Wildlife Federation
Bill Mathias, LMA, LM Power Squadron
Bill Cutler, Lake Watch, LM Homeowners Coalition

DATE: April 6, 2006

HOMEWORK ITEMS:

Alan Stuart – to research data on fatalities in the Lower Saluda River

These notes serve as a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

DISCUSSION

Alan Stuart opened the meeting and the group proceeded through introductions. Alan explained that this meeting was organized at the request of several stakeholders. Steve Bell explained that Lake Watch felt that more information was needed as it applies to Saluda and its uses.

Alan explained that SCE&G was in the process of developing a presentation on alternative energy sources. Bill Argentieri further explained that they hope to have a presentation ready in June or July that addresses the issues associated with alternative energy sources, energy sources that could replace Saluda, the permitting issues related to replacement energy sources, as well as their environmental impacts. Bill continued to explain that there would also be a dollar analysis that would address capital costs, fuel costs and O&M costs.

Gerrit Jobsis explained that he believed that although it was important to look at reserve, he was concerned with how the Saluda Project operates as it relates to compliance with water quality standards, minimum flow requirements, ESA standards, and recreation and safety needs. He noted that he believed that overall project operations need to be evaluated. Bill Argentieri replied that those issues would be addressed in an upgrade study. He noted that they were looking at runner improvements that would improve the water quality.

Bill Argentieri began to explain how Saluda was used for reserve. He noted that SCE&G started using Saluda to meet reserve requirements in the late 1990's. He noted that this was mainly due to requirement changes of VACAR. Bill informed the group that according to SCE&G's records, SCE&G was called on for reserve capacity by neighboring utilities 22 times since 1998. Bill further clarified that the records did not specify whether it was Saluda that was used to meet the reserve or if another plant was used. It also did not specify how many times Saluda was used for internal reserve needs. It was noted that in the past year SCE&G has been putting out a weekly report that specifies more information on how Saluda is used due in part to a settlement agreement with American Rivers and the South Carolina Coastal Conservation League (SCCCL). Bill explained that it was SCE&G's goal in relicensing to maintain the flexibility to use Saluda for reserve.

Steve Bell and Patrick Moore requested to form a technical committee (TWC) to explore the uses of Saluda. Patrick suggested acquiring USGS data in order to link it to Saluda operations. Charlene Coleman noted that weather patterns may also be needed when evaluating the use of Saluda Theresa Thom pointed out that it would be difficult to link flow data to operations at Saluda until recently as the reports have been put out in the past year.

Bill Cutler recommended the development of a statistical model that would predict the future use of Saluda by looking at past uses at Saluda as well as other facilities. Randy noted that the group could look at the historical data but it would be difficult to predict the unpredictable need for reserve. Gerrit Jobsis added that he did not believe the information was available at this point to develop a model.

Ray Ammarell explained to the group what information was issued in the weekly generation reports. He noted that dispatch provides any explanations for why Saluda is used and distinguishes if it is used for reserve.

The group briefly reviewed the goal of the proposed TWC. Gerrit noted that he believed the goal of the TWC would be to evaluate operational flexibility at Saluda and understand how it affects other interests. Gerrit further noted that once information is collected on the operations, the group could work towards an agreement on how they would move forward with operations. Steve Bell also added that it was Lake Watch's goal to obtain the operational flexibility information in a physical report form. The group concluded that the new TWC would serve to accomplish the following two goals:

- To better understand Saluda operations
- To review existing operations data
- To develop a process for using input from other RCG's to develop alternatives for operation.

Charlene Colman suggested that the committee start by obtaining the operations information from the past year. She explained that all the weather events and circumstances were still fresh in everyone's memories, and the occurrence of Katrina would show what would happen under an extreme event. Randy noted that that was agreeable to SCE&G as well.

Alan then asked the group who was interested in being a member of the TWC. The following people volunteered:

Mike Waddell
Steve Bell
Bill Cutler
Jennifer O'Rourke
Theresa Thom
Karen Kustafik
Patrick Moore
Bill Marshall
Bill Argentieri

The group then began to discuss safety on the river and the group collectively brainstormed ideas for the collection of information on this topic. Alan suggested developing a questionnaire that Trout Unlimited could distribute among its members. Tony Bebber pointed out that the recreation committee would be performing onsite studies, he noted that a few safety questions could be

incorporated as a component of the questionnaire such as "how the individual perceived the water level that day in terms of safe recreation".

Charlene Colman addressed the issue of safety on the lower Saluda River and noted that even if flow changes are implemented, the limiting factor will still be the responsibility of the public. She explained that people using the river, in majority, do not heed any warning, even personal. Randy Mahan mentioned that he would be in support of legislation that requires individuals who recreate below the hydro to wear a personal floatation device. The group agreed. Gerrit Jobsis added that warnings and operations can be improved and modified to limit unsafe conditions on the river.

Charlene then distributed information to the group addressing flows and recreation (attached below). She explained that the information was approximations made from 14 years of research. She noted that she worked with Bill Marshall and the SCE&G dispatchers to develop the information. Charlene agreed that the most helpful thing in regards to safety is to implement legislation that requires safety vests. She also noted that on May 13th there would be a 10,000 cfs recreation release if an individual wanted to see the effects of this.

Patrick Moore noted that he would be interested in obtaining information on fatalities on the lower Saluda River, he noted that he would be interested to find out if operations was effecting that. Alan Stuart noted that they would look into obtaining that information and that Alan Axson with the Columbia Fire and Rescue may have that information.

In closing Alan noted that the Technical Working Committee would meet directly after in order to quantify what information was needed and proceed with the next steps in data acquisition.

On a different note, Alan noted that Jim Landreth had asked him to note that if any members felt that their questions were not being answered in the group setting that Jim would be happy to talk with them personally.

The group adjourned.

Just for info for tomorrow

Flows--safety

250-1000 CFS is wade able but never recommended in rescue venues.

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1,000-4,000 Rescue is not a great risk level for the Fire Dept.. Strong swimmers would struggle and most likely swim at least 1/8 of a mile to get to land from the middle of the river.

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Stacia Hoover

From: Alison Guth
Sent: Wednesday, May 10, 2006 5:56 PM
To: Alan Stuart; Alison Guth; 'AMMARELL, RAYMOND R'; 'Kristina Massey'; 'Bud Badr'; 'aregaf@dnr.sc.gov'; Bret Hoffman; 'carolinacar1970@yahoo.com'; 'cheetahtrk@yahoo.com'; 'Lee Barber'; 'skfox@sc.rr.com'; 'eschnepel@sc.rr.com'; 'dlandis1@sc.rr.com'; 'Jennifer O'Rourke'; 'Tony Bebber'; 'Suzanne Rhodes'; 'Bigbillcutler@aol.com'; 'bellsteve9339 @bellsouth.net'; 'malcolml@gwm.sc.edu'; 'Mike Waddell'; 'Bill Marshall'; 'Gerrit Jobsis (American Rivers)'; 'Patrick Moore'; 'George Duke'; 'kakustafik@columbiasc.net'; 'theresa_thom@nps.gov'; 'Bill Mathias'; BARGENTIERI@scana.com; RMAHAN@scana.com; 'guyjones@sc.rr.com'
Subject: April 6th Draft Meeting Notes

Hello All,

Attached are the draft meeting notes from the April 6th combined Operations and Safety Meeting. Please have any comments/changes back to me by May 24 for finalization. Thanks, Alison

2006-04-06 draft Meeting Minut...

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
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F: (803) 822-3183

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS & SAFETY RESOURCE CONSERVATION GROUPS COMBINED MEETING

Saluda Shoals Park
April 6, 2006

5-10-06 draft acg

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
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Stacia Hoover

From: Alison Guth
Sent: Wednesday, April 05, 2006 4:04 PM
To: Alan Stuart; 'SUMMER, STEPHEN E'; 'Jim Ruane'; 'Tom Bowles (tbowles@scana.com)'; 'Gina Kirkland'; 'Patrick Moore'; 'Carlton D Wood'; 'Dick Christie'; BARGENTIERI@scana.com; RMAHAN@scana.com; 'Gerrit Jobsis (American Rivers)'; 'Tom Eppink'; 'Ray Ammarell'; 'Mike Summer (msummer@scana.com)'; 'bjmcmanus@jonesday.com'; 'gantenbein@n-h-i.org'
Subject: March 23 Saluda Operations Meeting Notes

Good Afternoon Folks,

Attached are the draft meeting notes from the March 23 Saluda Operations Meeting. Please let me know of any changes by April 19th for finalization. Thanks for your continued participation in this process. Alison

2006-3-23 draft Meeting Minute...

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Licensing Coordinator
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT
Annual Saluda Hydro Operations Meeting

SCE&G Research Park Facility
March 23, 2006

Draft ACG 3-29-06

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Steve Summer, SCANA Services
Jim Ruane, REMI
Tom Bowles, SCE&G
Gina Kirkland, SCDHEC
Patrick Moore, SCCCL & American Rivers
Carlton Wood, USGS
Dick Christie, SCDNR
Bill Argentieri, SCE&G
Randy Mahan, SCANA Services
Gerrit Jobsis, American Rivers
Tom Eppink, SCANA Services
Ray Ammarell, SCE&G
Mike Summer, SCE&G
Brian McManus, Jones Day
Julie Gantenbein, NHI

DATE: March 23, 2006

INTRODUCTIONS AND DISCUSSION

Alan opened the meeting and the group began introductions. Alan noted that the first topic of discussion would be to review the 2005 Operations Plan. He asked the group if there were any questions on the work that was done last year. He also noted that the 2006 plan was due to be submitted by June 30th of this year. There were no questions and Alan turned the discussion over to Jim Ruane to review the Dissolved Oxygen Monitor Relocation Study.

Jim Ruane began to discuss the draft Monitor Relocation Report. He noted that it included a summary of the data, however the raw data was also available. The group began an interactive discussion on the report. Jim pointed out that the studies were performed with the unit aeration systems closed in order to help define mixing characteristics. He added that this was not how SCE&G would normally operate the system. He noted a few of the specifics of the study and explained that they had 11 monitors deployed and focused primarily on 15 runs, each run with a boat transect.

The group began to discuss which area would be best for the monitor relocation. Jim noted that his observations have shown that a spot in transect 3 looks promising. Steve Summer explained that he has hopes of the group agreeing on one location rather than pulling water samples from multiple locations.

The group continued to go through the tables and figures. Gerrit Jobsis expressed concern that there was the possibility that one gage location may not pick up dissolved oxygen (DO) variation across the river if one unit was not working correctly. Jim noted that situation may still be found even if there were two monitors or even three. Gina Kirkland explained that they typically give some relief for a mixing area, however, that they would need to determine what defined compliance and how far downstream mixing would be allowed to occur. She also expressed her concern about the installment of two or more monitoring stations. She explained that if there is a large difference in readings you have to determine which monitor is reading correctly and if compliance is being met.

Alan explained to the group how the units were currently venting. He noted that Jim Carter had just performed tests on unit 4 and it was shown to vent very well, similarly to unit one. It was also explained that Units 2 and 3 are in the initial stages of having their seals repaired and should be ready for the testing in October. Gina asked if for future maintenance SCE&G would periodically test the intake air to make sure it is operating well over time. Steve Summer noted that he thought that it may be something to consider. He added that normally if they run a unit and it is not venting correctly it is apparent.

Bill Argentieri began to explain to the group what research has been done on the USGS monitor relocation. He noted that SCE&G has had discussions with USGS on a flow through design monitor, however, USGS has had serious maintenance and piping issues with this model in the past. Bill also noted that have had Jim Ruane look into a better single location for a USGS monitor as well. The group began to discuss the monitor relocation issue in a little more detail and asked Carlton Wood to give a little feedback on this issue. Carlton explained that USGS attempts to locate a continuous monitor in a location that is representative of the mean as shown by transects. He noted that he was certain that the present location of the monitor is extremely biased towards the negative regarding DO values and that he has personally observed large masses of aquatic vegetation hanging on the housing and suffocating the monitor. Steve Summer added that aerial inspections have shown longitudinal beds of Elodea near the bank. Carlton then continued to explain that he believes that bank erosion or run-off is causing an orange film on the membrane that you would not typically observe out towards the middle of the river. Carlton pointed out that if it was decided that a single location would be used, he would suggest a location towards the middle of the channel. He noted that they can also increase the inspections at necessary times of the year as well. Gina Kirkland noted that she was comfortable having a single location. She explained that part of the reason why she was comfortable with the single location is because there are margins of safety built into the standard and an occasional exceedence from the standard would not cause a huge problem with the stream. Gerrit noted that he was still concerned with an average condition obtained from one monitor location, however, he did noted that an average condition may be acceptable if there was a commitment from SCE&G not to operate a unit when it is not running properly and if there was some kind of routine maintenance agreement. Gina then asked Gerrit if

there was a percentage that could be acceptable because operating at 90 percent was still good. Gerrit noted that there may be a particular number that he could agree to.

In response to Gerrit's previous concern, Steve Summer explained that there were some instances under which SCE&G would have to run the units, even if they were not venting fully. He gave an example of a high rainfall event, and noted that if a hurricane was immanent that they would have to run the units to prepare. Steve also noted that they would need to maintain their reserve capabilities if a unit went down elsewhere.

Alan Stuart turned discussion towards what could be done in the upcoming year. Steve Summer proposed that SCE&G and USGS continue the investigations on extending the USGS gage toward the center of the river and if it is shown that the movement of the monitor will provide a more representative data set then they will proceed with moving the monitor. Carlton Wood added that they may also consider increasing the frequency of inspections from July through September. Gerrit Jobsis noted that he agreed that the current location had problems, however he noted that they still have to consider what the objective of the location or locations will be and if it is going to give an average number. SCE&G also suggested performing some additional boat transects with the unit vents open once all of the repairs were made.

After the break, Alan passed out a graph developed by Jim Carter of TVA that showed the improvements to the units since the installation of hub baffles. In interpreting the graph, it was shown that the greater the negative pressure, the better the aspiration. The graph showed that the units are continuing to aspirate even at high flows.

The group then began to discuss the 2005 Annual Report. Jim Ruane began to explain the deviations that occurred in the past year. He noted that there were a few occasions where flows exceeded 8000 cfs. He explained that there are several reasons why there were deviations, and explained that the aeration studies and monitor relocation studies caused a number of the deviations and that there were also some special flows requested by the city of Columbia. After brief discussion, the group agreed that performing the swiftwater rescue training during the low DO season was detrimental to water quality and it should be performed during other times in the year. Bill Argentieri noted that he would send an email to Columbia Fire and Rescue and to Karen Kustifik explaining this.

Jim continued to explain the report and pointed out that the drawdown in preparation for hurricane Katrina was another reason for the operation of the units. Jim noted that unit 1, which aerates very well, was operated for the majority of the time. He also pointed out that the DO was up quite a bit in 2005 due to the hub baffles being installed. Jim explained figure 6 from the report and noted that

through the analysis of the thirty day averages it turns out that the deviations occurred due to the studies, the special operations and fouling.

In an explanation of the data for November, Jim Ruane noted that that USGS data was provisional and the finalized data was needed for that time period. Carlton Wood also added that during that period of time he also visually inspected large masses of aquatic vegetation surrounding the instrumentation. Carlton continued to note that he recalls that November 15th was an inspection date and pointed out a sharp increase in the graph. He explained that this was not attributed to a change in discharge but to maintenance on the gage.

Jim Ruane explained to the group that they are continuing to learning more about turbine aeration through plant studies and computer models, and it may be possible to decrease the number of runs that they perform with no aeration. Gina noted that she was concerned about the resource, however she thought it important to perform the no aeration runs in order to provide good data to move forward with, and develop look up tables from. She added that she would like to push to gather enough quality information in order to make a conclusive determination of the attainment of the standard. Gerrit noted his concern with the no aeration runs. Jim Ruane explained that he believes that the runs can be shortened this year because last year there were some problems in the powerhouse. Jim noted that he would take a look at the data and decide what type of minimum no aeration run scenario he felt comfortable with.

After lunch, Jim Ruane gave a presentation to the group on the results of the turbine venting testing. He explained that units 1 and 5 were the only units evaluated because the others were having maintenance issues. He pointed out a graph and noted that it shows that at low flows there is little difference in the venting, however at high flows you can see a marked difference with the installation of the hub baffles. He further explained that with a flow around 2000 cfs you have a DO of about 4.5, while pre-hub baffle DO was around 3. Jim noted that once the seals are working in the other two units, they expect the DO to significantly increase. Gerrit asked Jim what the forebay DO was estimated to be at. Jim replied the DO coming in would be in between a half and 1 mg. Ray Ammarell further noted that on October 4th the DO was very close to zero up to about 40 meters in depth and remained at around .5mg almost the entire length of the water column.

Alan explained to the group that the plan for this year includes repairing the seals on units 2 and 3 and performing the additional turbine testing this fall. Bill noted that they are planning on finishing the work on the units no later than September 15th.

The group moved into discussions on the 2006 Operating Plan. Alan asked the group what time of year would be appropriate if SCE&G were to implement a routine test of the units as proposed by Gerrit. Steve noted that if the units were tested at the wrong time of year then it was possible that

they could drive the total dissolved gasses up. Jim Ruane replied that a few hours of testing would probably not be an issue.

Gerrit Jobsis asked the group if there was a way to know if the vents were not working. The group decided that they would look into some type of indicator. It was also noted that the look up tables would be revised to accommodate the operation of unit 4 as well as scenarios that would take into account of any unit outages. The group also discussed the possibility of using unit 5 if the striped bass habitat was sufficient. It was decided that there needed to be further discussion on this issue with DNR.

The group discussed the fall drawdown and Gerrit asked if it could be at a slower rate over a longer period of time. Steve noted that there was conflict between the individuals who would prefer the lake up as long as possible as well as the need to have reserves off-line and ready. Bill Argentieri noted that they would look into this issue and consider some type of balance.

The group concluded the meeting and Gerrit asked if SCE&G could come up with a written agreement on how to operate the plant normally with the variances of Saluda's use for reserve and when needed for weather circumstances. Randy noted that they would draft up a statement.

Meeting Adjourned

Stacia Hoover

From: Alan Stuart
Sent: Monday, March 20, 2006 9:09 AM
To: Alan Stuart; ''Amanda Hill (Amanda_Hill@fws.gov)' '; ''Dick Christie (dchristie@infoave.net)' '; ''Hal Beard' '; ''Prescott Brownell (Prescott.Brownell@noaa.gov)' '; ''gjobsis@americanrivers.org' '; ''Patrick Moore' '; ''Gina Kirkland - DHEC' '; ''cdwood@usgs.gov' '; ''Sarah W Ellisor' '; ''Richard Roos-Collins' '; ''Julie Gantenbein' '
Cc: BARGENTIERI@scana.com; ''Jim Ruane' '; RMAHAN@scana.com; ''Ray Ammarell (RAmmarell@scana.com)' '; ''Steve Summer' '; ''Tom Eppink' '; ''Brian J. McManus' '; ''BOWLES, THOMAS M' '; Alison Guth; ''EPPINK, THOMAS G' '
Subject: Saluda Hydro Operations Meeting Agenda

Agenda.doc (22 KB)

Good morning all,

Please find the attached agenda for our upcoming meeting on March 23, 2006 at CAROLINA RESEARCH PARK (CRP. As you will see we have a pretty full day so please be prompt. We are scheduled to go until 2:15 p.m but time/dicussions will likely dictate the length of the meeting.

As a reminder, CRP is located off of Farrow Road in Columbia and please let me know if anyone needs directions to CRP.

For those conferencing in by telephone, the call in number to the conference room is (803) 217-7397.

regards,
Alan

Alan Stuart
Kleinschmidt
Senior Licensing Coordinator
(803) 822-3177
(803) 640-8765 cellphone

Meeting Agenda

Saluda Hydro (FERC No. 516) Operations Meeting

Carolina Research Park
9:00 A.M.

March 23, 2006

9:00 – 9:30	Review 2005 Operations Plan
9:30 – 10:30	Review/Discuss Dissolved Monitor relocation Study
10:30 – 12:00	Review/Discuss 2005 Operations Report
12:00 – 12:45	Lunch
12:45 – 1:30	Discuss 2005 Turbine Testing Results and plans for 2006 testing
1:30 – 2:15	Discuss 2006 Operations Plan Preparation and Schedule
2:15	Adjourn

Stacia Hoover

From: Alison Guth
Sent: Friday, March 17, 2006 1:54 PM
To: Wenonah Haire; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Andy Miller; Bertina Floyd; BARGENTIERI@scana.com; Bill Cutler; Bill East; Bill Green; Bill Hulslander; Bill Marshall; Bill Mathias; Bob Seibels; Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Cam Littlejohn; Chad Long; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Craig Stow; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Fetner; Edward Schnepel; George Duke; Gerrit Jobsis (American Rivers); Gerrit Jobsis (CCL); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); James Smith; Jay Robinson; Jeanette Wells; Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; John and Rob Altenberg; John Davis (johned44@bellsouth.net); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Malcolm Leaphart; Marianne Zajac; Mark Leao; Marty Phillips; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Prescott Brownell; Ralph Crafton; Randal Shealy; RMAHAN@scana.com; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener; Robert Lavisky; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sam Drake; Sandra Reinhardt; Sean Norris; Shane Boring; Stanley Yalicki; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Tim Flach; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Brooks; Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Mike Schimpff; Brandon Kulik; Marty Phillips
Subject: Final Jan 26 Notes

Hello all:

Attached to this email is the final meeting notes for the Jan 26th Operations meeting. They will also be posted to the web. Thanks, Alison

2006-01-26 Final Meeting Minut...

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
P: (803) 822-3177
F: (803) 822-3183

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE CONSERVATION GROUP

SCE&G Training Center
January 26, 2006

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Amanda Hill, USFWS
Bill Argentieri, SCE&G
Bill Hulslander, Congaree National Park
Bret Hoffman, Kleinschmidt Associates
Bud Badr, DNR
Dave Landis, Lake Murray Association
Dick Christie, SCDNR
Gina Kirkland, SCDHEC
Joy Downs, LMA
Kristina Massey, Kleinschmidt Associates
Michael Waddell, TU
Mike Schimpff, Kleinschmidt Associates
Mike Summer, SCE&G
Patrick Moore, SCCCL, Am. Rivers
Randy Mahan, SCANA Services
Ray Ammarell, SCE&G
Steve Bell, Lake Watch
Straud Armstrong, SCDNR
Theresa Thom, Congaree National Park
Tom Eppink, SCANA Services
Tom Ruple, Lake Murray Association

DATE: January 26, 2006

AGENDA TOPICS FOR NEXT MEETING:

Presentation (as described in minutes and requested by Patrick Moore, Michael Waddell, and Steve Bell) or TWC to present specific cost analysis for different methods of meeting reserve beyond what was explained in the Operations presentation, in order to effectively balance that cost with project impacts.

DATE OF NEXT MEETING: **TBD after the TWC has had time to start developing a model.**

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

DISCUSSION

Mike Schimpff introduced himself and noted that the purpose of the day's discussion was not to inform the group as to which model he believed they should choose, but to give some understanding

as to what is available. Mike noted that there were hydraulic models, hydrologic models, economic models and WQ models and that these models could be combined.

Mike began to discuss some of the model uses that were identified at the previous Operations Meeting. These included lake levels, LSR minimum flows, inflows, generation, storage and graphic ability. Gina Kirkland also noted that water quality needs should be included as well when developing the model.

Mike briefly discussed a few models that were widely used. These included HEC-5, Oasis, CHEOPS, MIKE Basins, WMS and Decision Support Programs. Bud Badr asked Mike to explain a little about a Decision Support Model.

Gina noted that DHEC would like to have access to the model in order to run scenarios and verify the baseline settings. Mike Schimpff noted that it depended on which model was used because some models had proprietary constraints. Alan asked Gina if a DHEC representative could be present while they were running scenarios if a model with proprietary constraints was chosen. Gina noted she would discuss this with some individuals at DHEC, but the important thing would be that DHEC would need to feel like they are participating in the inputs. Bill Argentieri further noted that the objective was not to prevent agencies from using it, but to avoid breaking any proprietary laws.

Bud Badr shared a little about his experience with modeling to the group. He noted that when he and Larry Turner (DHEC) worked with Duke they used CHEOPS. He noted that an agreement was signed that allowed use of the model by agencies, but only for that particular project. Bud mentioned that one way to address water quality in the operations model was to address it using flows.

The group then began to discuss the Oasis Model. Mike explained that Oasis operates as a shell that programs can run inside of. Mike continued to explain that a benefit of Oasis is that it can interface with other models and run them simultaneously.

CHEOPS was the next model that the group discussed. Mike explained that it was private domain software that focuses on hydroelectric optimization. Bud Badr added that one of the deficiencies with CHEOPS in this situation was that it was 100 percent tilted toward hydroelectric generation and runs in 15 minute segments. He explained that this would make it difficult to sort through 50 years of data.

In a discussion on SCE&G's current flow forecasting model it was noted that it provided a good source for historical inflow data. Bud Badr also noted that the flow forecasting model dealt with tributaries as well.

There was some discussion on Water Quality issues and how they would be tied into the model. Dick Christie noted that outputs from the water quality model would be developed within the Water Quality RCG.

Mike Schimpff continued to discuss HEC versions with the group (HEC-5, HEC-RES-SIM).

After lunch the groups then began to define the constraints needed in the model. Bud explained that the model needed to be calibrated for high flow and low flow conditions. He noted that the longer the period of record that was available, the better. He explained that this was because it could include both the dry cycles and wet cycles. Bud added that a modeler did not want extreme events like a drought to run the model. He noted that those events should be considered outliers and dealt with in a low flow protocol.

In continued discussion on constraints Bud pointed out that in an Operations Model, constraints had to be related to lake elevations or downstream flows in some fashion. Mike gave the example that water quality in the Lake could be related to Lake levels.

Constraints (with Tasks to Resource Group):

- Instream flows and downstream water quality (Fish & Wildlife RCG)
- Spring spawning levels in the lake (Fish & Wildlife RCG)
- Public water withdrawals
- Drought Management
- Recreational lake levels (Recreation RCG)
- Recreational releases (Recreation RCG)
- Lake level stabilization – Winter drawdown issues (Lake and Land Mgnt RCG)
- Navigation flows (Recreation RCG, Fish & Wildlife RCG)
- Flood plain inundations – timing, frequency, magnitude (Fish & Wildlife RCG)
- Safety flows (Safety RCG)
- Reserve generation

Dick Christie noted that navigation flows were very important to DNR and pointed out that DNR policy requires them to recommend the highest flow that meets water quality, navigation and habitat criteria.

The QA/QC process was discussed with respect to input data to the Operations model. The group concurred that quality data is of the utmost concern and will be dealt with by the TWC. Anecdotal data would be evaluated on a case-by-case basis by the TWC.

Mike Schimpff concluded from the list of constraints that all of the issues could be boiled down to lake levels and minimum flows. Bud added that the model has to be able to provide downstream flows at different sites. The group concurred.

Looking at the issues, Mike Schimpff pointed out that they could be effectively modeled in an Excel spreadsheet, in HEC-5 and Oasis. The group agreed that CHEOPS would not be ideal because it looked at data every 15 minutes. Ray Ammarell noted that Oasis has the most flexibility and HEC-5 is developed around reservoir system modeling but might work well also. Gina asked if Oasis would interface well with models that were developed in other RCG's. Mike indicated that it would.

Bud explained that the HEC-5 and Oasis inputs are similar. However, he pointed out that HEC-5 is a public domain model. He also added that a benefit of HEC-5 was the HEC Support Center. Bud noted that a sophisticated model was not needed for a lake such as Lake Murray.

Alan noted that from a cost perspective, you would have to consider that a lot of upfront work may need to be done with HEC-5.

Bill Argentieri noted that if there were no objections, SCE&G would go ahead with Oasis, Oasis Lite or HEC-5. The group concurred as long as the chosen model would get the job done.

The discussion turned to developing a TWC. Mike Schimpff indicated that very technically skilled people are needed to run the models. Bud concurred that Mike should take the lead and the TWC serve as an advisory committee.

Patrick Moore stated the operations group needed to look at the specifics on reserve capacity options in order for the stakeholders to gauge the reasonableness of their requests. Patrick Moore continued to note the following, "There needs to be some quantifiable value on current operations. We heard a general discussion of alternatives from Lee with general descriptions of the logistical challenges of some alternatives. For example, gas turbines were stated to be about 50% reliable. Promotional materials from General Electric advertising 90% reliability , provided by Trout Unlimited, were referenced as an example of a possibility that could be explored at the next meeting or in a TWC. At other RCGs, reserve requirement issues significantly relating to safety, recreation, and water quality, are reserved for the Operations RCG. Options for meeting these reserves should

be specifically evaluated in preparing the Protection, Mitigation & Enhancement agreement." He requested that SCE&G provide this information to stakeholders at the next Operations meeting.[1]

Tom Eppink noted that while he didn't think there would be a problem in SCE&G doing this, he wasn't sure it could be developed by the next meeting. This due in part to the uncertainty of who within SCE&G could/would give the presentation and could not make the commitment on someone else's behalf. However, he added that they would begin the process of lining this up for the future.

TWC Members:

- Mike Schimpff
- Bud Badr
- Larry Turner
- NHI Representative
- Ray Ammarell
- Mike Waddell (Observer)

Mike would prepare a draft study with an outline of the model with a schedule and submit it to the TWC for review.

Meeting adjourned.

[1] Although Meeting Notes are not intended to be transcripts of the meeting, Mr. Moore requested that this paragraph be included in the notes after the meeting for clarification purposes.

Saluda Hydro Relicensing
Operations Resource Conservation Group

Meeting Agenda

January 26, 2006
9:30 AM
Saluda Shoals Park – Rivers Conference Center – SE Freight Room

- **9:30 to 12:00** Hydrologic Models Presentation and Question Session
- **12:00 to 12:30** Lunch
- **12:30 to 2:30** Interactive Discussion on Model Inputs and Sources
- **2:30 to 3:00** Develop List of Homework Assignments, Develop Agenda for Next Meeting, and Set Meeting Date

  Adjourn

Saluda HYDRO RELICENSING

Cheryl Balitz

From: Patrick Moore [PatrickM@scccl.org]
Sent: Friday, March 03, 2006 5:05 PM
To: RMAHAN@scana.com; Alison Guth; BARGENTIERI@scana.com; Alan Stuart; ArmstrongS@dnr.sc.gov; SUMMER, MICHAEL C; EPPINK, THOMAS G; Kristina Massey; Bret Hoffman; AMMARELL, RAYMOND R; dlandis1@sc.rr.com; truple@sc.rr.com; BadrB@dnr.sc.gov; dchristie@infoave.net; mwaddell@esri.sc.edu; bellsteve9339 @bellsouth.net; Theresa_thom@nps.gov; Elymay2@aol.com; KIRKLAGL@dhec.sc.gov; amanda_hill@fws.gov; Mike Schimpff
Cc: tbebber@scprt.com; bill_hulslander@nps.gov; marshallb@dnr.sc.gov; cheetahtrk@yahoo.com; kayakduke@bellsouth.net; gjobsis@americanrivers.org; mckellarh@sc.dnr.gov; bkawasi@sc.rr.com; jeff_duncan@nps.gov; dvklmass@bellsouth.net; lmichalec@aol.com; mark_leao@fws.gov; parkin@parkinhunter.com; crafton@usit.net; r1shealy@aol.com; rjernigan@scfbins.com; suzrhodes@juno.com; stonecypher@istreamconsulting.com
Subject: RE: Draft Operations Meeting notes-Glaring Omission

If Alison took any offense to my comments, I certainly and sincerely apologize.

I also feel she doesn't need Randy's help in speaking up as to what she may or may not take offense to. If she asked for Randy to say something, that is another story all together. I am well aware of the daunting task of recording all of the things that go on in all of the RCGs and understand there will be incidental omissions.

In re-reading my email, I can find nothing that qualifies as a "sneer". I said "I am not sure how such a clear steatement was overlooked". I stand by this statement. I made a statement to the head facilitator, he repeated it to the group and asked for clarification, 2 stakeholders spoke in support of the proposition, and the head facilitator wrote it down for the group and said it would happen at some point in the future. So, no offense to Alison intended, I am not sure how such a clear statement was overlooked. Randy was not even in the room.

I also said "thanks for all your hard work". This was a genuine thank you for being the clearinghouse of all the information exchanges that this new license process entails. I can see how, after pointing out an omission, a cynical person might interpret that as some sort of "shot" at the minutes recorder. It was defintiely not intended as such and I was genuinely wondering aloud how the omission occurred. I can find no other portion of the email that could be construed as offensive.

You will also find no mention whatsoever of an express or implied effort on the part of SCE&G to skew the minutes in the email I sent to Alison.

I would appreciate any further attempts to stir the pot with a well intentioned correction be sent to me personally.

Patrick Moore

-----Original Message-----
From: MAHAN, RANDOLPH R [mailto:RMAHAN@scana.com]
Sent: Fri 3/3/2006 4:26 PM
To: Patrick Moore; Alison.Guth@KleinschmidtUSA.com; ARGENTIERI, WILLIAM R; alan.stuart@kleinschmidtUSA.com; ArmstrongS@dnr.sc.gov; SUMMER, MICHAEL C; EPPINK, THOMAS G; Kristina.Massey@KleinschmidtUSA.com; Bret.Hoffman@KleinschmidtUSA.com; AMMARELL, RAYMOND R; dlandis1@sc.rr.com; truple@sc.rr.com; BadrB@dnr.sc.gov; dchristie@infoave.net; mwaddell@esri.sc.edu; bellsteve9339@bellsouth.net; Theresa_thom@nps.gov; Elymay2@aol.com; KIRKLAGL@dhec.sc.gov; amanda_hill@fws.gov; Mike.Schimpff@KleinschmidtUSA.com
Cc: tbebber@scprt.com; bill_hulslander@nps.gov; marshallb@dnr.sc.gov; cheetahtrk@yahoo.com; kayakduke@bellsouth.net; gjobsis@americanrivers.org; mckellarh@sc.dnr.gov; bkawasi@sc.rr.com; jeff_duncan@nps.gov; dvklmass@bellsouth.net; lmichalec@aol.com; mark_leao@fws.gov; parkin@parkinhunter.com; crafton@usit.net; r1shealy@aol.com; rjernigan@scfbins.com; suzrhodes@juno.com;

stonecypher@istreamconsulting.com
Subject: Re: Draft Operations Meeting notes-Glaring Omission

If one believes something may have been omitted from the minutes that one believes to be material and important, it certainly is appropriate to say so, so that the omission can be rectified. However, it does not advance the ball whatsoever in the direction of open and honest communication and the creation of a useful record to imply with a verbal sneer that it must have been some intentional, underhanded effort to skew the record and, as if it were possible with the extraordinary amount of cross memberships in. RCGs and TWCs, to avoid dealing with a raised topic. There are no orders, explicit or implicit, from SCE&G or anyone else to prepare meeting minutes in any way other than with total honesty and in accordance with the notes taken at the meetings. I believe Alison is due an apology.

Randy Mahan

-----Original Message-----
From: Patrick Moore
To: Alison Guth; ARGENTIERI, WILLIAM R; Alan Stuart; ArmstrongS@dnr.sc.gov; SUMMER, MICHAEL C; EPPINK, THOMAS G; Kristina Massey; Bret Hoffman; MAHAN, RANDOLPH R; AMMARELL, RAYMOND R; dlandis1@sc.rr.com; Tom Ruple; BadrB@dnr.sc.gov; Dick Christie; Mike Waddell; Steve Bell; Theresa_thom@nps.gov; Joy Downs; Gina Kirkland; Amanda Hill; Mike Schimpff
CC: Tony Bebber; Alan Stuart; Amanda Hill; ARGENTIERI, WILLIAM R; Bill Hulslander; Bill Marshall; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; James Smith; Jeff Duncan; Joy Downs; Kristina Massey; Larry Michalec; Mark Leao; SUMMER, MICHAEL C; Mike Waddell; Parkin Hunter; Ralph Crafton; Randal Shealy; MAHAN, RANDOLPH R; AMMARELL, RAYMOND R; Russell Jernigan; Steve Bell; Suzanne Rhodes; Tom Ruple; Tom Stonecypher; Bret Hoffman
Sent: Fri Mar 03 15:53:08 2006
Subject: RE: Draft Operations Meeting notes-Glaring Omission

Hey Alison,

One of the last things that happened at the meeting was that I requested an operational alternatives analysis and presentation at the next Operations RCG meeting, then to all RCGs. I recall at least Steve Bell and Mike Waddell voiced their support for this proposition and Alan wrote it on the easel. I am not sure how such a clear statement was overlooked.

Please make sure the minutes reflect that request, who supported it, and Alan’s response that it would happen in the future.

Thanks for all your hard work,

Patrick Moore

Water Quality Associate

Coastal Conservation League

1207 Lincoln St. Suite 203-C

Columbia, S.C. 29201

803.771.7102

-----Original Message-----
From: Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]
Sent: Friday, March 03, 2006 2:48 PM

To: 'Bill Argentieri'; Alan Stuart; 'ArmstrongS@dnr.sc.gov'; 'msummer@scana.com'; 'teppink@scana.com'; Kristina Massey; Bret Hoffman; 'Randy Mahan'; 'rammarell@scana.com'; 'dlandis1@sc.rr.com'; 'Tom Ruple'; 'BadrB@dnr.sc.gov'; 'Dick Christie'; 'Mike Waddell'; 'Steve Bell'; Patrick Moore; 'Theresa_thom@nps.gov'; 'Joy Downs'; Gina Kirkland; 'Amanda Hill'; Mike Schimpff

Cc: Tony Bebber; Alan Stuart; Alison Guth; Amanda Hill; Bill Argentieri; Bill Hulslander; Bill Marshall; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; James Smith; Jeff Duncan; Joy Downs; Kristina Massey; Larry Michalec; Mark Leao; Mike Summer (msummer@scana.com); Mike Waddell; Parkin Hunter; Patrick Moore; Ralph Crafton; Randal Shealy; Randy Mahan; Ray Ammarell; Russell Jernigan; Steve Bell; Suzanne Rhodes; Tom Ruple; Tom Stonecypher; Bret Hoffman

Subject: Draft Operations Meeting notes

Hello Operations RCG,

Well today is my day to get caught up on meeting notes. You will notice that I have CC'ed the entire group on this email. Our new meeting notes protocol includes the entire group on the draft notes, however, I will only accept changes to the meeting notes themselves from individuals that attended the meeting. If you did not attend the meeting but have a comment you may submit it to me for inclusion in a special separate section at the end of the document. Please have any changes or comments back to me by Feb 17th. Thanks and I hope everyone has a wonderful weekend. Alison

<<2006-01-26 draft Meeting Minutes - Operations.doc>>

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
P: (803) 822-3177
F: (803) 822-3183

Stacia Hoover

From: Alison Guth
Sent: Friday, March 03, 2006 2:48 PM
To: BARGENTIERI@scana.com; Alan Stuart; 'ArmstrongS@dnr.sc.gov'; 'msummer@scana.com'; 'teppink@scana.com'; Kristina Massey; Bret Hoffman; RMAHAN@scana.com; 'rammarell@scana.com'; 'dlandis1@sc.rr.com'; 'Tom Ruple'; 'BadrB@dnr.sc.gov'; 'Dick Christie'; 'Mike Waddell'; 'Steve Bell'; 'Patrick Moore'; 'Theresa_thom@nps.gov'; 'Joy Downs'; 'Gina Kirkland'; 'Amanda Hill'; Mike Schimpff
Cc: Tony Bebber; Alan Stuart; Alison Guth; Amanda Hill; BARGENTIERI@scana.com; Bill Hulslander; Bill Marshall; Bud Badr; Charlene Coleman; Dave Landis; Dick Christie; George Duke; Gerrit Jobsis (American Rivers); Gina Kirkland; Hank McKellar; James Smith; Jeff Duncan; Joy Downs; Kristina Massey; Larry Michalec; Mark Leao; Mike Summer (msummer@scana.com); Mike Waddell; Parkin Hunter; Patrick Moore; Ralph Crafton; Randal Shealy; RMAHAN@scana.com; Ray Ammarell; Russell Jernigan; Steve Bell; Suzanne Rhodes; Tom Ruple; Tom Stonecypher; Bret Hoffman
Subject: Draft Operations Meeting notes

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2006-01-26 draft Meeting Minut...

Alison Guth
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE CONSERVATION GROUP

SCE&G Training Center
January 26, 2006

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Amanda Hill, USFWS
Bill Argentieri, SCE&G
Bill Hulslander, Congaree National Park
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Straud Armstrong, SCDNR
Theresa Thom, Congaree National Park
Tom Eppink, SCANA Services
Tom Ruple, Lake Murray Association

DATE: January 26, 2006

AGENDA TOPICS FOR NEXT MEETING:

- Patrick Moore suggested that SCE&G provide a presentation on potential options for meeting reserve.

DATE OF NEXT MEETING: **TBD after the TWC has had time to start developing a model.**

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

DISCUSSION

Mike Schimpff introduced himself and noted that the purpose of the day's discussion was not to inform the group as to which model he believed they should choose, but to give some understanding as to what is available. Mike noted that there were hydraulic models, hydrologic models, economic models and WQ models and that these models could be combined.

Mike began to discuss some of the model uses that were identified at the previous Operations Meeting. These included lake levels, LSR minimum flows, inflows, generation, storage and graphic ability. Gina Kirkland also noted that water quality needs should be included as well when developing the model.

Mike briefly discussed a few models that were widely used. These included HEC-5, Oasis, CHEOPS, Mike Basins, WMS and Decision Support Programs. Bud Bahr asked Mike to explain a little about a Decision Support Model.

Gina noted that DHEC would like to have access to the model in order to run scenarios and verify the baseline settings. Mike Schimpff noted that it depended on which model was used because some models had proprietary constraints. Alan asked Gina if a DHEC representative could be present while they were running scenarios if a model with proprietary constraints was chosen. Gina noted she would discuss this with some individuals at DHEC, but the important thing would be that DHEC would need to feel like they are participating in the inputs. Bill Argentieri further noted that the objective was not to prevent agencies from using it, but to avoid breaking any proprietary laws.

Bud Badr shared a little about his experience with modeling to the group. He noted that when he and Larry Turner (DHEC) worked with Duke they used HEC-5, which is a public domain model. He noted that an agreement was signed that allowed use of the model by agencies, but only for that particular project. Bud mentioned that one way to address water quality in the operations model was to address it using flows.

The group then began to discuss the Oasis Model. Mike explained that Oasis operates as a shell that programs can run inside of. Mike continued to explain that a benefit of Oasis is that it can interface with other models and run them simultaneously.

CHEOPS was the next model that the group discussed. Mike explained that it was private domain software that focuses on hydroelectric optimization. Bud Badr added that one of the deficiencies with CHEOPS in this situation was that it was 100 percent tilted toward hydroelectric generation and runs in 15 minute segments. He explained that this would make it difficult to sort through 50 years of data.

In a discussion on SCE&G's current flow forecasting model it was noted that it provided a good source for historical inflow data. Bud Badr also noted that the flow forecasting model dealt with tributaries as well.

There was some discussion on Water Quality issues and how they would be tied into the model. Dick Christie noted that outputs from the water quality model would be developed within the Water Quality RCG.

Mike Schimpff continued to discuss HEC versions with the group (HEC-5, HEC-RAZ).

After lunch the groups then began to define the constraints needed in the model. Bud explained that the model needed to be calibrated for high flow and low flow conditions. He noted that the longer the period of record that was available, the better. He explained that this was because it could include both the dry cycles and wet cycles. Bud added that a modeler did not want extreme events like a drought to run the model. He noted that those events should be considered outliers and dealt with in a low flow protocol.

In continued discussion on constraints Bud pointed out that in an Operations Model, constraints had to be related to lake elevations or downstream flows in some fashion. Mike gave the example that water quality in the Lake could be related to Lake levels.

<u>Constraints (with Tasks to Resource Group):</u>

- Instream flows and downstream water quality (Fish & Wildlife RCG)
- Spring spawning levels in the lake (Fish & Wildlife RCG)
- Public water withdrawals
- Drought Management
- Recreational lake levels (Recreation RCG)
- Recreational releases (Recreation RCG)
- Lake level stabilization – Winter drawdown issues (Lake and Land Mgnt RCG)
- Navigation flows (Recreation RCG, Fish & Wildlife RCG)
- Flood drain inundations – timing, frequency, magnitude (Fish & Wildlife RCG)
- Safety flows (Safety RCG)
- Reserve generation

Dick Christie noted that navigation flows were very important to DNR and pointed out that DNR policy requires them to recommend the highest flow that meets water quality, navigation and habitat criteria.

The QA/QC process was discussed with respect to input data to the Operations model. The group concurred that quality data is of the utmost concern and will be dealt with by the TWC. Anecdotal data would be evaluated on a case-by-case basis by the TWC.

Mike Schimpff concluded from the list of constraints that all of the issues could be boiled down to lake levels and minimum flows. Bud added that the model has to be able to provide downstream flows at different sites. The group concurred.

Looking at the issues, Mike Schimpff pointed out that they could be effectively modeled in an Excel spreadsheet, in HEC-5 and Oasis. The group agreed that CHEOPS would not be ideal because it looked at data every 15 minutes. Ray Ammarell noted that Oasis has the most flexibility and HEC-5 is developed around reservoir system modeling but might work well also. Gina asked if Oasis would interface well with models that were developed in other RCG's. Mike indicated that it would.

Bud explained that the HEC-5 and Oasis are exactly the same in the data itself, and that the inputs are the same. However, he pointed out that HEC-5 is a public domain model. He also added that a benefit of HEC-5 was the HEC Support Center. Bud noted that a sophisticated model was not needed for a lake such as Lake Murray.

Alan noted that from a cost perspective, you would have to consider that a lot of upfront work may need to be done with HEC-5.

Bill Argentieri noted that if there were no objections, SCE&G would go ahead with Oasis, Oasis Lite or HEC-5. The group concurred as long as the chosen model would get the job done.

The discussion turned to developing a TWC. Mike Schimpff indicated that very technically skilled people are needed to run the models. Bud concurred that Mike should take the lead and the TWC serve as an advisory committee.

TWC Members:

- Mike Schimpff
- Bud Bahr
- Larry Turner
- NHI Representative
- Ray Ammarell
- Mike Waddell (Observer)

Mike would prepare a draft study with an outline of the model with a schedule and submit it to the TWC for review.

Meeting adjourned.

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE CONSERVATION GROUP

SCE&G Training Center
January 26, 2006

Saluda Hydro Relicensing
Operations Resource Conservation Group

Meeting Agenda

January 26, 2006
9:30 AM
Saluda Shoals Park – Rivers Conference Center – SE Freight Room

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- **9:30 to 12:00** Hydrologic Models Presentation and Question Session
- **12:00 to 12:30** Lunch
- **12:30 to 2:30** Interactive Discussion on Model Inputs and Sources
- **2:30 to 3:00** Develop List of Homework Assignments, Develop Agenda for Next Meeting, and Set Meeting Date

  Adjourn

Saluda HYDRO RELICENSING

Stacia Hoover

From: Alison Guth
Sent: Friday, February 17, 2006 5:11 PM
To: Alan Stuart; Alison Guth; 'bill_hulslander@nps.gov'; 'cheetahtrk@yahoo.com'; 'dlandis1 @sc.rr.com'; 'dchristie@infoave.net'; 'kayakduke@bellsouth.net'; 'KIRKLAGL@dhec.sc.gov'; 'Bkawasi@sc.rr.com'; 'Jeff_Duncan@NPS.gov'; 'Elymay2@aol.com'; 'dvklmass@bellsouth.net'; 'lmichalec@aol.com'; 'parkin@parkinhunter.com'; 'PatrickM@scccl.org'; 'crafton@usit.net'; 'rjernigan@scfbins.com'; 'bellsteve9339 @bellsouth.net'; 'suzrhodes@juno.com'; 'truple@sc.rr.com'; 'Stonecypher@istreamconsulting.com'; 'gjobsis@americanrivers.org'; 'rammarell@scana.com'; BARGENTIERI@scana.com; 'msummer@scana.com'; RMAHAN@scana.com; Kristina Massey; 'mark_leao@fws.gov'; 'amanda_hill@fws.gov'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'mwaddell@esri.sc.edu'; 'r1shealy@aol.com'; 'tbebber@scprt.com'; Bret Hoffman; Mike Schimpff
Subject: Final Operations Meeting Notes

Hello Operations Group

Attached is the Final set of meeting notes from the Dec. 6th Meeting. The draft Jan 26th meeting notes should be out next week. Have a wonderful weekend. Alison

2005-12-06 Final Meeting Notes...

Alison Guth
Licensing Coordinator
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
December 6, 2005

Final 2-17 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Amanda Hill, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers
Jeff Duncan, NPS
Michael Waddell, TU
Bill Cutler, Lake Watch

DATE: December 6, 2005

ACTION ITEMS:

- Hydrologic Model Presentation
  SCE&G\Kleinschmidt Associates

HOMEWORK ITEMS:

- Think about what information needs to be presented in this group for educational purposes

AGENDA TOPICS FOR NEXT MEETING:

- Presentation on Hydrologic Models
- Discussion

DATE OF NEXT MEETING: **January 26, 2006 at 9:30 a.m.**

Located at the Saluda Shoals Park Rivers Center

DISCUSSION

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan opened the meeting and introduced Bill Argentieri as the speaker for the presentation on the "Nuts and Bolts of Saluda Operations." Bill began his presentation, and several questions about definitions came up during the course of the discussion. After a cross-section of a general hydropower plant was shown, several questions arose about the penstocks and the towers. It was noted that the penstocks are the pipes that let the water from the lake flow through the turbines, and the penstocks are inspected on a periodic basis. A question arose on whether or not the towers require maintenance and Bill replied that most of the maintenance on the towers has to do with the mechanical components such as the gates.

Mike Waddell asked how Saluda Hydro efficiency is affected by lake levels. Kristina replied that as the Lake drops the efficiency drops as well. There was some discussion on the water intake from the towers and the restrictions associated with Unit 5, including those restrictions caused by the congregation of blueback herring around the Unit 5 tower during certain times of the year. It was noted that SCE&G has hydro-acoustic equipment that monitor the presence of fish in the vicinity of the intake, including the blueback herring.

Bill began to give the group some background on the Project and some of the specifics about the plant were noted. He pointed out that first four units can generate 3000 cfs of water flow per unit at full load and Unit 5, being about twice the size, can generate 6000 cfs at full load. George Duke asked how old the generators were, to which Bill replied that they are 75 years old. From a maintenance standpoint, Mike Summer added that a few of the units have been rewound.

Discussions then turned to turbine venting. Patrick Moore asked if the hub baffles allowed all of the units to be equally effective at venting. Alan Stuart explained that all of the units vent at different efficiencies, with a major contributor to this being the condition of the seals on the units.

The group briefly discussed the maintenance on the units. It was noted that the units are frequently inspected and electrical testing is performed routinely. When asked if there was a life span on the units, Mike Summer noted that it is more cost effective to maintain a unit over a period of time as opposed to replacing the whole unit. Kristina Massey added that units 1-4 had major overhauls in the late 70's to early 80's. Bill noted that SCE&G is looking at the potential for upgrading the units

and KA is doing a study to provide SCE&G with some options for upgrading. Bill added that this study takes into account many issues, including the environmental issues.

Bill began to discuss Unit 5 and noted that because it does not have an isolation valve on the unit itself, the gate has to be closed at the tower. He added that Unit 5 was "bought off of the shelf" in the late 60's, as opposed to being specifically designed for the location, water flows, head, etc. where it is. It went into operation in '71.

The group then began to discuss the emergency spillway. Bill explained that in the event that the dam were in danger of being overtopped, the spillway gates could be opened for the emergency release of water, hence the name "emergency spillway." This is the only operational function of the emergency spillway. Bill pointed out that the spillway channel is not the original Saluda River channel but rather a manmade channel. Amanda Hill asked if the natural streambed was where the powerhouse is now. Bill replied that it was between the towers and the spillway. There was some discussion on the Probable Maximum Flood and also on the black start capabilities of the plant. Bill noted that if there were a blackout, Saluda was one of the few plants on SCE&G's system that could start from scratch. The group also briefly discussed the Flow Forecasting Model.

Mike Waddell asked what SCE&G uses for reserves if they were running Saluda due to rainfall. Bill replied that they either use another plant, such as the Monticello Pumped Storage Project, or they buy power from another system. One group member inquired as to whether SCE&G anticipated Lake Murray being required to operate as a flood control lake and how that might impact inundation at the Congaree National Park. Randy noted that he believed it was imprudent for anyone to count on Saluda for flood control when 2/3 of the flow into the Congaree comes from the Broad rather than the Saluda.

The group began to discuss the operational warning sirens on the LSR, as well as the sirens that are activated in the event of a dam failure. Bill noted that emergency action brochures that explain what people should do should they be alerted to a potential dam failure are mailed out to those individuals who reside in the zip code areas below the dam and drills are preformed on a regular basis.

Discussions began to center around the maintenance work on the dam and the upcoming placement of rip-rap on the upstream face of the dam. Bill noted that they were waiting until the north bound lanes were complete so that traffic could be re-routed, otherwise the existing south bound lane section of Hwy 6 would have to be shut down.

Bill concluded his presentation and the group began to discuss the mission statement. It was agreed that the goal of the group would be to develop a hydrologic operations model.

The group began to discuss what they would like to see come out of a model. It was discussed that the model needs to be user friendly. There were several models that were mentioned, including Hec 5 and Oasis. Bill Hulslander noted that it was important to make sure the model was able to take inputs or outputs from other RCGs. Bud Badr explained his view that the model would actually be a water allocation model that would take into account how much water was in the Lake, how much water was coming into the Lake and how much water was flowing out of the Lake. He noted that it would look at what the interests would be upstream, as well as downstream interests and SCE&G's interests. Bud continued to explain that each interest would be converted into a number value and while the system is being run it will show how many times a certain interest is infringed upon during different scenarios. He noted that the model can be worked to show how many interests "violations" will occur over a span of time. Bud mentioned that everyone is given equal consideration in the model.

Patrick Moore noted that a few years ago American Rivers and the National Heritage Institute started to model the entire Santee Basin. He added that this model would be ready in the next few months. Bud noted that it was a very good model but that it did not substitute for the model that was needed here.

Parkin Hunter asked if the model would be stochastic. Bud replied that it would be deterministic because it is going to use actual measurements and limitations from the Lake.

In a further explanation of his expectations for the model, Bud noted that the first step would be to get the inflows for an extended period of time. He then explained that you need such data as daily rainfall and the daily capacity to develop the baseline. He pointed out that the modeler has to establish relationships between certain demands and interests and lake level elevations. Bud added that evaporation also has to be considered. With respect to downstream interests, he noted that water quality can be reflected in terms of a certain flow or height. He added that the same idea applies to fisheries and navigation. He explained that the modeler will run the scenario and the baseflow for the last fifty years or so. Bud noted that once the model has been built, it will be a tool to mimic the real system, and can be calibrated for high flow, average flow and low flow.

There was some discussion on how floods and droughts would be incorporated into the model. It was noted that the model was going to be calibrated to the last 30 years of climate data. Bud noted that in 2002 there was a very extreme drought and added that he did not believe that extreme drought events, such as that one, should drive the allocations of the model. He pointed out that that event should probably be excluded and put under a low flow protocol. George Duke inquired that if the model was going to exclude the extreme drought cases, then shouldn't it exclude the extreme flooding cases as well. Bud replied that problems arose when there was not enough water in the

Lake, such as in drought situations, and too much water was not a worry in regards to water allocations.

The group decided that at the next meeting SCE&G would give a presentation on potential models that could be used for Lake Murray and that also could interface into SCE&G's computer system. George Duke suggested that it may be good to show the presentation to the other groups as well so that they will know what is needed from them. Alan agreed.

Bud noted that it would be beneficial to the state agencies to have access to the model and noted that they could sign a contract stating that they would not share it with any outside groups.

Through an interactive discussion the group gave suggestions as to what they would like the model outputs to be; they are listed below:

Outputs of the model
Lake Levels
LSR Flows
Inflows
Generation
Lake Capacity, storage
Frequency, magnitude and duration of demand satisfaction
Graphic Ability
Interactive Model Front

The group then agreed on the mission statement, which is listed below.

> "The Mission of the Operations Resource Conservation Group (ORCG) is to oversee the development of a robust hydrologic model for the Saluda Project which will establish a baseline of current hydrologic, hydraulic, and operational conditions, and aid in analyzing and understanding the potential upstream and downstream effects of potential changes to project operations, in support of the missions and goals of all other Saluda Hydroelectric Relicensing RCGs. The objective is to fairly consider those impacts, to include low-flow conditions as a part of developing consensus-based, operations focused recommendations for the FERC license application. Model results are to be presented in readily understandable terms and format. A key measure of success in achieving the mission and goals will be a published Protection, Mitigation, and Enhancement (PM&E) Agreement."

The group decided that the next meeting would occur on January 26 at 9:30. The training center was booked for that date but after the meeting Alison was able to secure a room at the Saluda Shoals Park Rivers Center for the meeting location.

Cheryl Balitz
From: RMAHAN@scana.com
Sent: Tuesday, January 24, 2006 1:12 PM
To: Alison Guth
Subject: Re: Operations Agenda

-----Original Message-----
From: Alison Guth <Alison.Guth@KleinschmidtUSA.com>
To: Alan Stuart <Alan.Stuart@KleinschmidtUSA.com>; Alison Guth
<Alison.Guth@KleinschmidtUSA.com>;
'bill_hulslander@nps.gov' <bill_hulslander@nps.gov>; 'cheetahtrk@yahoo.com'
<cheetahtrk@yahoo.com>;
'dlandis1@sc.rr.com' <dlandis1@sc.rr.com>; 'dchristie@infoave.net' <dchristie@infoave.net>;
'kayakduke@bellsouth.net'
<kayakduke@bellsouth.net>; 'KIRKLAGL@dhec.sc.gov' <KIRKLAGL@dhec.sc.gov>;
'Bkawasi@sc.rr.com'
<Bkawasi@sc.rr.com>; 'Jeff_Duncan@NPS.gov' <Jeff_Duncan@NPS.gov>; 'Elymay2@aol.com'
<Elymay2@aol.com>;
'dvklmass@bellsouth.net' <dvklmass@bellsouth.net>; 'lmichalec@aol.com' <lmichalec@aol.com>;
'parkin@parkinhunter.com' <parkin@parkinhunter.com>; 'PatrickM@scccl.org' <PatrickM@scccl.org>;
'crafton@usit.net'
<crafton@usit.net>; 'rjernigan@scfbins.com' <rjernigan@scfbins.com>; 'bellsteve9339@bellsouth.net'
<bellsteve9339@bellsouth.net>; 'suzrhodes@juno.com' <suzrhodes@juno.com>; 'truple@sc.rr.com'
<truple@sc.rr.com>;
'Stonecypher@istreamconsulting.com' <Stonecypher@istreamconsulting.com>;
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ARGENTIERI, WILLIAM
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RANDOLPH R
<RMAHAN@scana.com>; Kristina Massey <Kristina.Massey@KleinschmidtUSA.com>;
'mark_leao@fws.gov'
<mark_leao@fws.gov>; 'amanda_hill@fws.gov' <amanda_hill@fws.gov>; 'BadrB@dnr.sc.gov'
<BadrB@dnr.sc.gov>;
'tohunter@scbar.org' <tohunter@scbar.org>; 'marshallb@dnr.sc.gov' <marshallb@dnr.sc.gov>;
'mwaddell@esri.sc.edu'
<mwaddell@esri.sc.edu>; 'r1shealy@aol.com' <r1shealy@aol.com>; 'tbebber@scprt.com'
<tbebber@scprt.com>; Bret
Hoffman <Bret.Hoffman@KleinschmidtUSA.com>
Sent: Tue Jan 24 13:06:51 2006
Subject: Operations Agenda
Hello all,
I have attached the agenda for Thursdays Operations meeting. If you are planning on coming and have not let me know yet
please do, we are getting boxed lunches, so it is important that I have the right number. So far I have heard from the
following individuals (not including SCE&G and KA folks):
Amanda Hill
Bill Hulslander +1
George Duke (unable to attend)
Bud Badr +1
Dave Landis
Gina Kirkland

Joy Downs
Michael Waddell
Parkin Hunter
Steve Bell
Tom Ruple
Thanks,
Alison
<<operations RCG Agenda 1 26 06.pdf>>
Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
Suite 21A
West Columbia, SC 29170
P: (803) 822-3177
F: (803) 822-3183

From: Alison Guth
Sent: Friday, March 17, 2006 12:54 PM
To: Wenonah Haire; Aaron Small; Alan Axson; Alan Stuart; Alison Guth; Amanda Hill; Andy Miller; Bertina Floyd; BARGENTIERI@scana.com; Bill Cutler; Bill East; Bill Green; Bill Hulslander; Bill Marshall; Bill Mathias; Bob Seibels; Brandon Stutts ; Bret Hoffman; Brett Bursey; btrump@scana.com; Bud Badr; Buddy Baker ; Cam Littlejohn; Chad Long; Charlene Coleman; Charles Floyd; Charlie Compton; Charlie Rentz; Chris Judge; Chris Page; Craig Stow; Daniel Tufford; Dave Anderson; Dave Landis; David Allen; David Hancock; David Jones; David Price; Dick Christie; Don Tyler; Donald Eng; Ed Diebold; Ed Fetner; Edward Schnepel; George Duke; Gerrit Jobsis (American Rivers); Gerrit Jobsis (CCL); Gina Kirkland; Guy Jones; Hal Beard; Hank McKellar; Irvin Pitts (ipitts@scprt.com); James Smith; Jay Robinson; Jeanette Wells; Jeff Duncan; Jennifer O'Rourke; Jennifer Price ; Jennifer Summerlin; Jerry Wise; Jim Devereaux; Jim Glover; Jim Goller; Jim Ruane ; JoAnn Butler; Joe Logan; John and Rob Altenberg; John Davis (johned44@bellsouth.net); Jon Leader; Joy Downs; Karen Kustafik; Keith Ganz-Sarto; Ken Uschelbec; Kenneth Fox; Kim Westbury; Kristina Massey; Larry Michalec; Larry Turner (turnerle@dhec.sc.gov); Lee Barber; Malcolm Leaphart; Marianne Zajac; Mark Leao; Marty Phillips; Mary Kelly; Michael Murrell; Mike Duffy; Mike Sloan; Mike Summer (msummer@scana.com); Mike Waddell; Miriam Atria; Norm Nicholson; Norman Ferris; Parkin Hunter; Patricia Wendling; Patrick Moore; Prescott Brownell; Ralph Crafton; Randal Shealy; RMAHAN@scana.com; Ray Ammarell; Rebekah Dobrasko; Reed Bull (rbull@davisfloyd.com); Rhett Bickley; Richard Kidder; Richard Mikell; Robert Keener; Robert Lavisky; Ron Ahle; Ronald Scott; Roy Parker; Russell Jernigan; ryanity@scana.com; Sam Drake; Sandra Reinhardt; Sean Norris; Shane Boring; Stanley Yalicki; Steve Bell; Steve Leach; Steve Summer; Suzanne Rhodes; Theresa Powers (tpowers@newberrycounty.net); Tim Flach; Tim Vinson; Tom Bowles (tbowles@scana.com); Tom Brooks; Tom Eppink; Tom Ruple; Tom Stonecypher; Tommy Boozer; Tony Bebber; Van Hoffman; Wade Bales (balesw@dnr.sc.gov); Mike Schimpff; Brandon Kulik; Marty Phillips
Subject: Final Jan 26 Notes

Hello all:

Attached to this email is the final meeting notes for the Jan 26th Operations meeting. They will also be posted to the web. Thanks, Alison

2006-01-26 Final Meeting Minut...

Al son Guth
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West Columbia, SC 29170
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F: (803) 822-3183

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE CONSERVATION GROUP

SCE&G Training Center
January 26, 2006

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Amanda Hill, USFWS
Bill Argentieri, SCE&G
Bill Hulslander, Congaree National Park
Bret Hoffman, Kleinschmidt Associates
Bud Badr, DNR
Dave Landis, Lake Murray Association
Dick Christie, SCDNR
Gina Kirkland, SCDHEC
Joy Downs, LMA
Kristina Massey, Kleinschmidt Associates
Michael Waddell, TU
Mike Schimpff, Kleinschmidt Associates
Mike Summer, SCE&G
Patrick Moore, SCCCL, Am. Rivers
Randy Mahan, SCANA Services
Ray Ammarell, SCE&G
Steve Bell, Lake Watch
Straud Armstrong, SCDNR
Theresa Thom, Congaree National Park
Tom Eppink, SCANA Services
Tom Ruple, Lake Murray Association

DATE: January 26, 2006

AGENDA TOPICS FOR NEXT MEETING:

Presentation (as described in minutes and requested by Patrick Moore, Michael Waddell, and Steve Bell) or TWC to present specific cost analysis for different methods of meeting reserve beyond what was explained in the Operations presentation, in order to effectively balance that cost with project impacts.

DATE OF NEXT MEETING: **TBD after the TWC has had time to start developing a model.**

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DISCUSSION

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as to what is available. Mike noted that there were hydraulic models, hydrologic models, economic models and WQ models and that these models could be combined.

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There was some discussion on Water Quality issues and how they would be tied into the model. Dick Christie noted that outputs from the water quality model would be developed within the Water Quality RCG.

Mike Schimpff continued to discuss HEC versions with the group (HEC-5, HEC-RES-SIM).

After lunch the groups then began to define the constraints needed in the model. Bud explained that the model needed to be calibrated for high flow and low flow conditions. He noted that the longer the period of record that was available, the better. He explained that this was because it could include both the dry cycles and wet cycles. Bud added that a modeler did not want extreme events like a drought to run the model. He noted that those events should be considered outliers and dealt with in a low flow protocol.

In continued discussion on constraints Bud pointed out that in an Operations Model, constraints had to be related to lake elevations or downstream flows in some fashion. Mike gave the example that water quality in the Lake could be related to Lake levels.

Constraints (with Tasks to Resource Group):

- Instream flows and downstream water quality (Fish & Wildlife RCG)
- Spring spawning levels in the lake (Fish & Wildlife RCG)
- Public water withdrawals
- Drought Management
- Recreational lake levels (Recreation RCG)
- Recreational releases (Recreation RCG)
- Lake level stabilization – Winter drawdown issues (Lake and Land Mgnt RCG)
- Navigation flows (Recreation RCG, Fish & Wildlife RCG)
- Flood plain inundations – timing, frequency, magnitude (Fish & Wildlife RCG)
- Safety flows (Safety RCG)
- Reserve generation

Dick Christie noted that navigation flows were very important to DNR and pointed out that DNR policy requires them to recommend the highest flow that meets water quality, navigation and habitat criteria.

The QA/QC process was discussed with respect to input data to the Operations model. The group concurred that quality data is of the utmost concern and will be dealt with by the TWC. Anecdotal data would be evaluated on a case-by-case basis by the TWC.

Mike Schimpff concluded from the list of constraints that all of the issues could be boiled down to lake levels and minimum flows. Bud added that the model has to be able to provide downstream flows at different sites. The group concurred.

Looking at the issues, Mike Schimpff pointed out that they could be effectively modeled in an Excel spreadsheet, in HEC-5 and Oasis. The group agreed that CHEOPS would not be ideal because it looked at data every 15 minutes. Ray Ammarell noted that Oasis has the most flexibility and HEC-5 is developed around reservoir system modeling but might work well also. Gina asked if Oasis would interface well with models that were developed in other RCG's. Mike indicated that it would.

Bud explained that the HEC-5 and Oasis inputs are similar. However, he pointed out that HEC-5 is a public domain model. He also added that a benefit of HEC-5 was the HEC Support Center. Bud noted that a sophisticated model was not needed for a lake such as Lake Murray.

Alan noted that from a cost perspective, you would have to consider that a lot of upfront work may need to be done with HEC-5.

Bill Argentieri noted that if there were no objections, SCE&G would go ahead with Oasis, Oasis Lite or HEC-5. The group concurred as long as the chosen model would get the job done.

The discussion turned to developing a TWC. Mike Schimpff indicated that very technically skilled people are needed to run the models. Bud concurred that Mike should take the lead and the TWC serve as an advisory committee.

Patrick Moore stated the operations group needed to look at the specifics on reserve capacity options in order for the stakeholders to gauge the reasonableness of their requests. Patrick Moore continued to note the following, "There needs to be some quantifiable value on current operations. We heard a general discussion of alternatives from Lee with general descriptions of the logistical challenges of some alternatives. For example, gas turbines were stated to be about 50% reliable. Promotional materials from General Electric advertising 90% reliability , provided by Trout Unlimited, were referenced as an example of a possibility that could be explored at the next meeting or in a TWC. At other RCGs, reserve requirement issues significantly relating to safety, recreation, and water quality, are reserved for the Operations RCG. Options for meeting these reserves should

be specifically evaluated in preparing the Protection, Mitigation & Enhancement agreement." He requested that SCE&G provide this information to stakeholders at the next Operations meeting.[1]

Tom Eppink noted that while he didn't think there would be a problem in SCE&G doing this, he wasn't sure it could be developed by the next meeting. This due in part to the uncertainty of who within SCE&G could/would give the presentation and could not make the commitment on someone else's behalf. However, he added that they would begin the process of lining this up for the future.

TWC Members:

- Mike Schimpff
- Bud Badr
- Larry Turner
- NHI Representative
- Ray Ammarell
- Mike Waddell (Observer)

Mike would prepare a draft study with an outline of the model with a schedule and submit it to the TWC for review.

Meeting adjourned.

[1] Although Meeting Notes are not intended to be transcripts of the meeting, Mr. Moore requested that this paragraph be included in the notes after the meeting for clarification purposes.

Saluda Hydro Relicensing
Operations Resource Conservation Group

Meeting Agenda

January 26, 2006
9:30 AM
Saluda Shoals Park – Rivers Conference Center – SE Freight Room

- **9:30 to 12:00** Hydrologic Models Presentation and Question Session
- **12:00 to 12:30** Lunch
- **12:30 to 2:30** Interactive Discussion on Model Inputs and Sources
- **2:30 to 3:00** Develop List of Homework Assignments, Develop Agenda for Next Meeting, and Set Meeting Date

  Adjourn

Saluda HYDRO RELICENSING

Stacia Hoover

From: Alison Guth
Sent: Monday, January 23, 2006 5:22 PM
To: Alan Stuart; 'rammarell@scana.com'; BARGENTIERI@scana.com; 'Gina Kirkland'; 'msummer@scana.com'; RMAHAN@scana.com; Kristina Massey; 'bellsteve9339 @bellsouth.net'; 'Amanda Hill'; 'Elymay2@aol.com'; 'truple@sc.rr.com'; 'dchristie@infoave.net'; 'BadrB@dnr.sc.gov'; 'parkin@parkinhunter.com'; 'marshallb@dnr.sc.gov'; 'kayakduke@bellsouth.net'; 'bill_hulslander@nps.gov'; 'PatrickM@scccl.org'; 'Jeff_Duncan@NPS.gov'; 'mwaddell@esri.sc.edu'; 'Bigbillcutler@aol.com'; Bret Hoffman
Subject: Draft meeting notes

Hello Operations RCG Members,

I have attached the draft meeting notes from the Dec. 6 Operations meeting for your review. Please have any changes back to me by Feb. 6. Also, just a reminder that your Operations RCG meeting this Thursday will be at the Saluda Shoals Park Rivers Center. Thanks, and let me know if you have any questions. Alison

2005-12-06 draft Meeting Notes...

Alison Guth
Licensing Coordinator
Kleinschmidt Associates
101 Trade Zone Drive
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West Columbia, SC 29170
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MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
December 6, 2005

Draft 1-23 ACG

ATTENDEES:

Alan Stuart, Kleinschmidt Associates
Alison Guth, Kleinschmidt Associates
Ray Ammarell, SCE&G
Bill Argentieri, SCE&G
Gina Kirkland, SCDHEC
Mike Summer, SCE&G
Randy Mahan, SCANA Services
Kristina Massey, Kleinschmidt Associates
Steve Bell, Lake Murray Watch
Amanda Hill, USFWS
Joy Downs, LMA
Tom Ruple, LMA
Dick Christie, SCDNR
Bud Badr, SCDNR
Parkin Hunter, Columbia Audubon
Bill Marshall, LSSRAC
George Duke, LMHOC
Bill Hulslander, Congaree National Park
Patrick Moore, SCCCL\Am. Rivers
Jeff Duncan, NPS
Michael Waddell, TU
Bill Cutler, Lake Watch

DATE: December 6, 2005

ACTION ITEMS:

- Hydrologic Model Presentation
  SCE&G\Kleinschmidt Associates

HOMEWORK ITEMS:

- Think about what information needs to be presented in this group for educational purposes

AGENDA TOPICS FOR NEXT MEETING:

- Presentation on Hydrologic Models
- Discussion

MEETING NOTES

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SALUDA HYDRO PROJECT RELICENSING
OPERATIONS RESOURCE GROUP

SCE&G Training Center
December 6, 2005

Draft 1-23 ACG

DATE OF NEXT MEETING: **January 26, 2006 at 9:30 a.m.**
Located at the Saluda Shoals Park Rivers Center

DISCUSSION

These notes serve to be a summary of the major points presented during the meeting and are not intended to be a transcript or analysis of the meeting.

Alan opened the meeting and introduced Bill Argentieri as the speaker for the presentation on the "Nuts and Bolts of Saluda Operations". Bill began his presentation and several questions about definitions came up during the course of the discussion. After a cross-section of a general hydropower plant was shown several questions arose about the penstocks and the towers. It was noted that the penstocks are the pipes that let the water from the lake flow into the powerhouse, and they are inspected on a periodic basis. A question arose on whether or not the towers require maintenance and Bill replied that most of the maintenance on the towers has to do with the mechanical components such as the gates.

Mike Waddell asked how Saluda Hydro efficiency is affected by lake levels. Kristina replied that as the Lake drops the efficiency drops as well. There was some discussion on the water intake from the towers and the restrictions associated with unit 5; including those restrictions caused by the congregation of blueback herring around the unit 5 tower during certain times of the year. It was noted that SCE&G has hydro-acoustic equipment that monitor the blueback herring.

Bill began to give the group some background on the Project and some of the specifics about the plant were noted. He pointed out that first four units can generate 3000 cfs per unit at full load and unit 5, being twice the size, can generate 6000 cfs at full load. George Duke asked how old the generators were, to which Bill replied that they were 75 years old. From a maintenance standpoint, Mike Summer added that a few of the units have been rewound.

Discussions then turned to turbine venting. Patrick Moore asked if the hub baffles allowed all of the units to be equally effective at venting. Alan Stuart explained that all of the units vent at different efficiencies with a major contributor to this being the condition of the seals on the units.

The group briefly discussed the maintenance on the units. It was noted that the units are frequently inspected and electrical testing is performed routinely. When asked if there was a life span on the units, Mike Summer noted that it is more cost effective to maintain a unit over a period of time as opposed to replacing the whole unit. Kristina Massey added that units 1-4 had major over hauls in the late 70's to early 80's. Bill noted that SCE&G is looking at upgrading the units and KA is doing

a study to provide SCE&G with some options for upgrading. Bill added that this study takes into account many issues, including the environmental issues.

Bill began to discuss unit 5 and noted that it does not have an isolation valve on the unit itself, the gate has to be closed at the tower. He added that unit 5 was "bought off of the shelf" in the late 60's and went into operation in '71.

The group then began to discuss the emergency spillway. Bill explained that in the event that the dam would be overtopped, the spillway gates could be opened for the emergency release of water. Bill pointed out that the spillway was not the original Saluda River channel but manmade. Amanda Hill asked if the natural streambed was where the powerhouse is now. Bill replied that it was between the towers and the spillway. There was some discussion on the Probable Maximum Flood and also on the black start capabilities of the plant. Bill noted that if there was a blackout Saluda was one of the few plants on SCE&G's system that could start from scratch. The group also briefly discussed the Flow Forecasting Model.

Mike Waddell asked what SCE&G used for reserves if they were running Saluda due to rainfall. Bill replied that they either used another plant or they buy power from another system. One group member inquired as to whether SCE&G anticipated Lake Murray being required to operate as a flood control lake and how that might impact inundation at the Congaree National Park. Randy noted that he believed it was improper that anyone should count on Saluda for flood control when 2/3 of the flow into the Congaree comes from the Broad.

The group began to discuss the operational warning sirens on the LSR, as well as the sirens that are activated in the event of a dam failure. Bill noted that brochures that explain what people should do in case of a dam failure are mailed out to those individuals who reside in the zip code below the dam and drills were preformed on a regular basis.

Discussions began to center around the maintenance work on the dam and the upcoming placement of rip-rap on the upstream face of the dam. Bill noted that they were waiting until the road was complete so that traffic could be re-routed, otherwise that section of Hwy 6 would have to be shut down.

Bill concluded his presentation and the group began to discuss the mission statement. It was noted that the goal of the group would be to develop a hydrologic operations model.

The group began to discuss what they would like to see come out of a model. It was discussed that the model needs to be user friendly. There were several models that were mentioned, including Hec 5 and Oasis. Bill Hulslander noted that it was important to make sure the model was able to take

inputs or outputs from other RCGs. Bud Badr explained that the model would actually be a water allocation model that would take into account how much water was in the Lake, how much water was coming into the Lake and how much water was flowing out of the Lake. He noted that it would look at what the interests would be upstream, as well as downstream interests and SCE&G's interests. Bud continued to explain that each interest would be converted into a number value and while the system is being run it will show how many times a certain interest is infringed upon during different scenarios. He noted that the model can be worked to show how many interests violations will occur over a span of time. Bud mentioned that everyone is given equal consideration in the model.

Patrick Moore noted that a few years ago American Rivers and the National Heritage Institute started to model the entire Santee Basin. He added that this model would be ready in the next few months. Bud noted that it was a very good model but that it did not substitute for the model that was needed here.

Parkin Hunter asked if the model would be stochastic. Bud replied that it would be deterministic because it is going to use actual measurements and limitations from the Lake.

In a further explanation of the model Bud noted that the first step would be to get the inflows for an extended period of time. He then explained that you need such data as daily rainfall and the daily capacity to develop the baseline. He pointed out that the modeler has to established relationships between certain demands and interests and lake level elevations. Bud added that evaporation also has to be considered. With respect to downstream interests, he noted that water quality can be reflected in terms of a certain flow or height. He added that the same idea applies to fisheries and navigation. He explained that the modeler will run the scenario and the baseflow for the last fifty years or so. Bud noted that once the model has been built, it will be a tool to mimic the real system, and can be calibrated for high flow, average flow and low flow.

There was some discussion on how floods and droughts would be incorporated into the model. It was noted that the model was going to be calibrated to the last 30 years of climate data. Bud noted that in 2002 there was a very extreme drought and added that he did not believe that extreme drought events, such as that one, should drive the allocations of the model. He pointed out that that event should probably be excluded and put under a low flow protocol. George Duke inquired that if the model was going to exclude the extreme drought cases, then shouldn't it exclude the extreme flooding cases as well. Bud replied that problems arose when there was not enough water in the Lake, such as in drought situations, and too much water was not a worry in regards to water allocations.

The group decided that at the next meeting SCE&G would give a presentation on potential models that could be used for Lake Murray and that also could interface into SCE&G's computer system. George Duke suggested that it may be good to show the presentation to the other groups as well so that they will know what is needed from them. Alan agreed.

Bud noted that it would be beneficial to the state agencies to have access to the model and noted that they could sign a contract stating that they would not share it with any outside groups.

Through an interactive discussion the group gave suggestions as to what they would like the model outputs to be; they are listed below:

Outputs of the model
Lake Levels
LSR Flows
Inflows
Generation
Lake Capacity, storage
Frequency, magnitude and duration of demand satisfaction
Graphic Ability
Interactive Model Front

The group then agreed on the mission statement, which is listed below.

> "The Mission of the Operations Resource Conservation Group (ORCG) is to oversee the development of a robust hydrologic model for the Saluda Project which will establish a baseline of current hydrologic, hydraulic, and operational conditions, and aid in analyzing and understanding the potential upstream and downstream effects of potential changes to project operations, in support of the missions and goals of all other Saluda Hydroelectric Relicensing RCGs. The objective is to fairly consider those impacts, to include low-flow conditions as a part of developing consensus-based, operations focused recommendations for the FERC license application. Model results are to be presented in readily understandable terms and format. A key measure of success in achieving the mission and goals will be a published Protection, Mitigation, and Enhancement (PM&E) Agreement."

The group decided that the next meeting would occur on January 26 at 9:30. The training center was booked for that date but after the meeting Alison was able to secure a room at the Saluda Shoals Park Rivers Center for the meeting location.

Cheryl Balitz

From: Patrick Moore [PatrickM@scccl.org]
Sent: Friday, January 13, 2006 8:45 AM
To: Alison Guth
Subject: Tour this morning

Alison,
I am under the weather and wont be able to make the tour today. I am disappointed my schedule did not allow for either tour this week. Thanks for all you do, Patrick

-----Original Message-----
From: Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]
Sent: Wed 1/11/2006 4:37 PM
To: Alan Stuart; Alison Guth; 'bill_hulslander@nps.gov'; 'cheetahtrk@yahoo.com'; 'dlandis1@sc.rr.com'; 'dchristie@infoave.net'; 'kayakduke@bellsouth.net'; 'KIRKLAGL@dhec.sc.gov'; 'Bkawasi@sc.rr.com'; 'Jeff_Duncan@NPS.gov'; 'Elymay2@aol.com'; 'dvklmass@bellsouth.net'; 'lmichalec@aol.com'; 'parkin@parkinhunter.com'; Patrick Moore; 'crafton@usit.net'; 'rjernigan@scfbins.com'; 'bellsteve9339@bellsouth.net'; 'suzrhodes@juno.com'; 'truple@sc.rr.com'; 'Stonecypher@istreamconsulting.com'; 'gjobsis@americanrivers.org'; 'pxanthakos@scana.com'; 'rammarell@scana.com'; 'bargentieri@scana.com'; 'msummer@scana.com'; 'rmahan@scana.com'; Kristina Massey; 'mark_leao@fws.gov'; 'amanda_hill@fws.gov'; 'BadrB@dnr.sc.gov'; 'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'mwaddell@esri.sc.edu'; 'r1shealy@aol.com'; 'tbebber@scprt.com'; Bret Hoffman
Cc:
Subject: Operations Mission Statement

Hello Operations RCG Members,

In our last Operations RCG we finalized the Operations Mission Statement. I have attached the final copy for your perusal and it will also be posted on the website. Thanks to all for your participations in this process. Please email me with any questions that you may have. Thanks, Alison

<<Operations RCG Mission Statement final acg.pdf>>

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Cheryl Balitz

From: Alison Guth [mailto:Alison.Guth@KleinschmidtUSA.com]
Sent: Friday, January 13, 2006 2:54 PM
To: Alan Stuart; Alison Guth; 'bill_hulslander@nps.gov'; 'cheetahtrk@yahoo.com'; 'dlandis1@sc.rr.com';
'dchristie@infoave.net'; 'kayakduke@bellsouth.net'; 'KIRKLAGL@dhec.sc.gov'; 'Bkawasi@sc.rr.com';
'Jeff_Duncan@NPS.gov'; 'Elymay2@aol.com'; 'dvklmass@bellsouth.net'; 'lmichalec@aol.com';
'parkin@parkinhunter.com'; 'PatrickM@scccl.org'; 'crafton@usit.net'; 'rjernigan@scfbins.com';
'bellsteve9339@bellsouth.net'; 'suzrhodes@juno.com'; 'truple@sc.rr.com'; 'Stonecypher@istreamconsulting.com';
'gjobsis@americanrivers.org'; AMMARELL, RAYMOND R; ARGENTIERI, WILLIAM R; SUMMER, MICHAEL C;
MAHAN, RANDOLPH R; Kristina Massey; 'mark_leao@fws.gov'; 'amanda_hill@fws.gov'; 'BadrB@dnr.sc.gov';
'tohunter@scbar.org'; 'marshallb@dnr.sc.gov'; 'mwaddell@esri.sc.edu'; 'r1shealy@aol.com'; 'tbebber@scprt.com';
Bret Hoffman
Subject: Operations Resource Group Meeting
When: Thursday, January 26, 2006 9:30 AM-3:00 PM (GMT-05:00) Eastern Time (US & Canada).
Where: Saluda Shoals Park - Rivers Conference Center
~~*~*~*~*~*~*~*~*

Good Afternoon Operations Group
Our next Operations Resource Group meeting will occur on January 26 at 9:30. As you may remember, in the
last meeting we were unable to secure a meeting room at the Lake Murray Training Center for this date.
Subsequently, we will have our meeting at the Rivers Center at Saluda Shoals Park. Please let me know by the
20th if you are planning on attending so that I will know how many lunches to order. Thanks so much and email
me with any questions that you may have.
Sincerely,
Alison