Minutes (Draft)
Scientific Advisory Subcommittee Meeting
May 5, 2008
DFS Central Laboratory, Classroom 1 & 2

Members Present

Wanda Adkins
Elizabeth Ballard
Jeffrey Ban
David Barron, Ph.D.
Joseph Bono
Katie Carlson
Dale Carpenter
Robin Cotton
Angie Cunningham
Barry Fisher
Michele Gowdy
Ann Marie Gross
Linda Jackson
Bradford Jenkins
Cathryn Knutson
Dan Krane, Ph.D.
Alka Lohmann
Peter Marone
Carna Meyer
Carissa Onorato
Alphonse Poklis, Ph.D.
John Przybylski
Stephen Rodgers
Norah Rudin, Ph.D.
Brian Shannon
Steven Sigel

Barry Fisher, Chairman of the Scientific Advisory Committee, called the meeting the order at 9:05 a.m.

Mr. Fisher thanked all the participants for participating in each of the subcommittee. Mr. Fisher had all in attendance to introduce themselves and where they were from.

Mr. Fisher explained that at the Forensic Science Advisory Board meeting on January 9, 2008 that the Board requested the Scientific Advisory Committee to perform and review the Y-STR testing that DFS is validating and report to the Board by the May 7, 2008 meeting. It was also requested other new technologies be reviewed for presentation to the Board on May 7, 2008 for Breath Alcohol New Instrumentation, AccuTOF-Dart and Mitochondrial DNA. He further explained that the Code of Virginia by statute formed

the Forensic Science Board as a policy board and part of their responsibility is to have the Scientific Advisory Committee to review and make recommendations on new scientific programs, protocols, and methods of testing for the Board's approval

As Chairman of the Scientific Advisory Committee, I created subcommittees to review this information and that's why each of you are here today to look into the procedures and protocols of each of the areas. Your subcommittees will report to the Scientific Advisory Committee on May 6, 2008 and then the committee will decide on what information to submit to the Forensic Science Board at its meeting on May 7, 2008.

Mr. Fisher explained that these meeting are covered by FOIA (Freedom of Information Act) and are considered open meetings and maybe attended by the general public. All the meeting will be recorded and minutes will be taken at the subcommittee meetings.

Mr. Fisher asked each committee at the end of their meetings today to be able to make a decision or draw a conclusion on these new methodologies. He felt they each had three choices:

1) DFS is not ready to implement
2) DFS is ready to implement
3) DFS is given provisional approval with further information to be given to Scientific Advisory Committee for additional review.

Each subcommittee shall appoint a Chairman and this person will be required to address the Scientific Advisory Committee on their recommendations at the meeting on Tuesday, May 6th. Each subcommittee's recommendations should be addressed to Mr. Fisher by the end of the day.

Mr. Fisher dismissed the sub-committees.

MINUTES (draft)
Scientific Advisory Committee
Subcommittee on mtDNA
MAY 5, 2008
DFS Central Laboratory, 1st Fl. Conference Room

Members of Subcommittee Present:

Dr. Norah Rudin (Member, Scientific Advisory Committee)
Ms. Catherine M. Knutson (Minnesota Bureau of Criminal Apprehension)
Ms. Carna E. Meyer (Armed Forces DNA Identification laboratory)

Staff Members Present:

Mr. Brad Jenkins (Forensic Biology Section Chief)
Mr. Stephen Rodgers (Forensic Scientist II mtDNA)
Mr. Brian Shannon (Forensic Scientist II mtDNA)
Ms. Katie Carlson (Assistant to Department Counsel)

Individuals Present at Some Point During Proceedings:

Mr. Peter Marone (Department Director)
Mr. Barry Fisher (Chair, Scientific Advisory Committee)
Dr. Dave Barron (Director of Technical Services)
Dr. Dan Krane (Member, Scientific Advisory Committee)
Ms. Michelle Gowdy (Department Counsel)
Mr. Steve Sigel (Deputy Director)

Call to Order:

Subcommittee meeting was called to order at 9:26am.

Mr. Jenkins welcomed the members and gave a brief introduction regarding the establishment of the mtDNA Unit (Unit) and his vision for how the Unit would function once online for casework. He briefly addressed casework flow and intended procedures.

Mr. Jenkins asked that as the first point of business the members select a Chair for the subcommittee. Dr. Rudin offered to be Chair since she was the only Scientific Advisory Committee (SAC) member and would be delivering the summation to the SAC. Ms. Knutson was offered to chair the subcommittee. There was discussion regarding the Chair duties and the decision was made to adopt Dr. Rudin as Chair.

Dr. Rudin asked for members to introduce themselves and to offer some background regarding their credentials.

Ms. Knutson indicated that she was hired at the Minnesota Bureau of Criminal Apprehension (MN BCA) in the nuclear section and subsequently became a mtDNA examiner when Minnesota became one of the four regional FBI mtDNA labs. She was trained at the FBI and was co-leader for the Minnesota mtDNA lab setup and validation and has been doing mtDNA casework since Oct. '05.

Ms. Meyer was hired by Armed Forces DNA Identification Laboratory (AFDIL) as an analyst in the mtDNA Unit. She works mostly bone cases. She is currently a supervisor in the nuclear section and still supervises some mtDNA projects and is still working mtDNA cases, mostly odd bone cases.

Dr. Rudin offered that she is a private forensic consultant, she had worked with the California Department of Justice (CAL-DOJ) for a few years establishing their lab, and she has held the role of tech-leader for several labs while concomitantly doing private defense work. She performed sequencing in graduate school but has not done mtDNA benchwork; she has reviewed lots of cases and data. She fulfills the molecular biology position on the SAC.

First Order of Business:

Dr. Rudin indicated she had just received the validation summaries and would need more time for a thorough evaluation. She asked the other members if they had comments about the protocol and/or how they would like to proceed.

Ms. Knutson indicated that most of her questions could probably be answered by going through the validation data and Ms. Meyer concurred.

Dr. Rudin asked if anyone had specific/pointed questions that could be answered.

Ms. Meyer asked who would be working in the section, knowing that Mr. Jenkins was promoted. Mr. Jenkins detailed who would be doing the work and that a supervisor would be hired, until then he would be providing oversight and technical review.

Ms. Knutson asked about the training program and if there would be specific training or a combination of training/validation. Mr. Jenkins indicated there is a training program, however the manual was not provided for review. Validation work and training through AFDIL will serve as training for current staff members.

Dr. Rudin took a moment to explain that issues may arise at the SAC meeting on May 6th regarding Chairman Fisher's best faith effort in appointing the subcommittee members.

Ms. Meyer asked who the laboratory was accredited by. Mr. Jenkins indicated that ASCLD/LAB has conferred accreditation to the Department.

Review of Validation:

A review of the validation commenced.

Ms. Knutson asked if the Unit had finished validation, Mr. Rodgers indicated validation was done and all data was here.

Ms. Meyer asked for status of the bone project with University of North Texas (UNT), Mr. Rodgers indicated no data has been received from UNT at this point.

Dr. Rudin asked for all validation summaries in electronic format.

Dr. Rudin asked if either subcommittee member had experience with linear array analysis (LA). Both members indicated they did not; discussion ensued regarding which labs did perform this type of analysis. Mr. Jenkins offered that since we do not have hair examiners to perform traditional type hair exams the LA will basically be a screening tool, he also offered a brief explanation of situations where the LA would be employed.

Ms. Meyer asked about typos in summaries/manual and should she address that. Mr. Jenkins indicated to please mark those areas and the Unit will review them.

Ms. Knutson asked about LA and its similarity to early DNA analysis, specifically HLA-DQalpha and presence of a control "dot". Mr. Jenkins explained the differences from that earlier form of analysis. Controls "dots" are not present in this system.

Dr. Rudin asked members about implementation of Chelex procedure in their labs. Members addressed if and where they use the procedure. Members also addressed current extraction protocols in place at their respective laboratories.

Dr. Rudin asked if Ms. Meyer was involved in the training of the Unit staff. She indicated she was involved for a short time during the Unit visit.

Dr. Rudin asked what the Trace section will be doing regarding their role in hair analysis. Mr. Rodgers explained that the Trace section will be screening the hairs but offering no formal report regarding hair comparisons. Discussion ensued between members and Mr. Rodgers regarding the extent of documentation by the Trace section particularly in light of the fact that the mtDNA Unit may often times consume the hairs. Members agreed to summarize the issue as a major point for final subcommittee report.

Ms. Knutson and Dr. Rudin discussed what if any independence the MN BCA has regarding their protocols, since Minnesota is one of the FBI regional mtDNA labs.

Ms. Meyer asked if IUPAC nomenclature will be used for reporting base calls, particularly heteroplasmy. Mr. Shannon indicated that heteroplasmic calls will be an "N" to the best of his knowledge.

Ms. Knutson re-addressed Trace documentation issue as Mr. Jenkins had returned to meeting. Mr. Jenkins explained how the Unit will be documenting the hairs. Dr. Rudin suggested that explicit documentation be presented in the standard operating procedures (SOP's) of what the Unit will be doing.

Ms. Knutson asked to review primer set sensitivity studies to determine input DNA levels.

Dr. Rudin suggested that members begin reviewing protocol and address validation issues as they come up in the protocols. Members agreed.

Review of Protocol:

Dr. Rudin asked for comments on Chapter 1 – Introduction and Sample Requirements.

Members commented on low-copy number (LCN) precautions. Members commented that LCN and contamination prevention protocols need to be addressed more in depth.

Members discussed "buzzword" terminology and sample handling requirements and the fact that they all agreed buzzwords should be removed. Contamination prevention and sample handling requirements need to be clearly specified in the SOP. A *"Say what you are doing in the protocol"* approach was suggested.

Ms. Knutson addressed the control region amplification and HV III data and indicated it needs to appear in the protocol. Discussion regarding issues associated with that data ensued.

Discussion between members regarding bones and unidentified remains next took place. Ms. Knutson and Dr. Rudin discussed when nuclear analysis will be attempted and that this issue should also be addressed further in the SOP.

The next discussion was about the requirement of knowns for unidentified remains analysis. Mr. Shannon attempted to explain how things will work when Unit is online. Discussion moved into area of contextual bias. Dr. Rudin discussed her philosophy of the analysis of knowns and questioned samples and how that issue should be addressed within the protocol. Members discussed how samples were analyzed in respective laboratories. Discussion touched on how samples are searched in the mtDNA database.

Ms. Knutson discussed how nuclear examiners will handle samples if it may be a situation where the sample will move forward for mtDNA. She suggested that issue be addressed with nuclear examiners as they may need to be more careful with sample than current nuclear protocol suggests.

Dr. Rudin and members discussed sample requirements for knowns.

Chapter 2 - Extraction

General discussion regarding "batching" procedures and how controls will flow occurred first. Members agreed that batching is acceptable but it really needs to be spelled out more comprehensively in the SOP's and how the controls for those batches will work.

Dr. Rudin suggested that each protocol be associated with *"checkboxes"* for when procedures are complete and data is collected. Dr. Rudin was very emphatic about quality issues and how the procedures should be written clearly. Members agreed.

Discussion turned to contamination prevention and wipe tests. Members agreed to discuss later.

Dr. Rudin stressed that the manual really needs to be a stand-alone document.

Discussion turned again to Chelex and which procedures will be utilized for extraction. Mr. Shannon explained Unit's extraction procedures and members again addressed what they used in their respective labs.

Ms. Knutson and Ms. Meyer asked for clarification on when cuttings will be saved and freeze/thaw cycles for samples.

Ms. Meyer asked about validation of UV tissue grinders. Mr. Shannon indicated the procedure was adopted from AFDIL and was not validated. Ms. Knutson indicated AFDIL should be cited.

Ms. Knutson suggested a xylene clean-up wash for all hairs that the Unit does not know where they are from, and asked about the Trace section and their participation in removal of hairs from mounting media. Further discussion took place regarding when blanks would be started in those situations. Ms. Knutson suggested more guidance for nuclear examiners when forwarding hairs. Dr. Rudin suggested more information be provided and that this was a training issue.

Ms. Knutson indicated that procedure for pooling of hairs should be spelled out if it is going to be done.

Discussion ensued regarding cleaning procedures, particularly the Waring blender cup, and how it should be done. Members also addressed when the Reagent Blank should begin, it was suggested that it start with a swabbing of the blender cup.

Mr. Jenkins fielded questions regarding issues that had arisen earlier in meeting when he was not present.

Dr. Rudin indicated she had an adjudicated case and would like to give the Unit the data to see how the Unit would interpret it based on the current protocols/interpretation guidelines. It is an FBI case done with d-rhodamine, predecessor to Big Dye chemistries.

Lunch break at 11:49am, returned to business at 12:15pm.

Chapter 3 - Amplification

The main concerns were once again sample requirements and handling, when samples would go to LA and when they would go directly to sequencing. Mr. Jenkins addressed the issues regarding how to triage samples to assure the best results.

Dr. Rudin indicated she liked the LA technology, however she indicated it creates a whole set of issues if in fact DFS is the first forensic lab to use it.

Members asked that the SOP's be clarified regarding analysis scheme and how samples will be analyzed. (LA, Primer sets, control region).

Members asked about what was validated for amplification. Mr. Jenkins indicated that half reactions are not validated at this point.

Mr. Jenkins explained primer set amplification strategy and sensitivity studies.

Dr. Rudin indicated she thought the Unit had done an excellent job in creating the protocol.

Chapter 4 - Product Evaluation

Review of this chapter began with a discussion regarding sensitivity of NuSieve product gels and what if fluorescence is not seen. How low do you need to go and take the sample forward? Mr. Rodgers clarified the point that using the LA study, samples will move forward with sequencing to see what the result would be. Discussion ensued as to what the decision tree is.

Mr. Rodgers explained that the information members wanted could be found in the specific chapters regarding LA, sequencing etc. Members suggested that SOP's be clarified incorporating a more clear decision tree for sample flow through lab.

Members discussed if the Unit has addressed primer binding site mutations. Mr. Jenkins indicated the Unit has and they are aware of potential influence on interpretation. Members understood that Unit could interpret potential problems from LA data. It was reiterated that this should be made clear in the SOP's.

Chapter 5 – Linear Array

General discussion began regarding the HL60 as a control and how it is interpreted. Mr. Jenkins indicated the Unit follows manufacturer's guidelines for array strips.

Discussion of validation and sensitivity followed. Members indicated that the validation summary should capture that data better.

Chapter 6 – Purification and Sequencing

Ms. Knutson questioned where the primers were listed as she did not see them in the reagents list and what the concentration of working stock is.

Discussion focused on batching and associated controls and how they would be sequenced. In addition, how would associated controls for a particular set of samples move through the process with those samples was discussed. Members agreed that the protocol should specifically address that scenario.

Dr. Rudin addressed her concern regarding Xterminator procedure and use of film on plates. Mr. Jenkins indicated that the procedure has worked well and Mr. Rodgers added a more complete view of the process to allay Dr. Rudin's concerns.
Ms. Knutson indicated that those points would be valuable to capture in a validation write up.

Ms. Meyer asked if a witnessing procedure is used for plate loading. Dr. Rudin commented that it is a weak link but didn't quite know what to suggest.

Discussion continued regarding available methods of clean-up and validation procedures. Members encouraged clarification within the protocol about when to use Edge gels or Xterminator. All members agreed that a validation should be written regarding sequencing. The members commented that the data is there and just needs to be summarized. Validations seem to be piece-meal and need to be bolstered by the data. In general, the validation studies don't seem to support the sequencing procedure and a write-up of that data is necessary.

Chapter 7 - Electrophoresis

Ms. Knutson asked about spatial and spectral calibrations for instrument and where the procedures are in the protocol. She suggested that this chapter should include; how to do it, criteria for when to do it and when those procedures are successful.

Members suggested that naming conventions need to be addressed. It would help with information flow and understanding of the data. It would also help in keeping injections, re-extractions, re-amps etc all straight. Data management would be streamlined.

Discussion also covered manual input of sample names etc. as opposed to electronic import to avoid errors.

Further discussion regarding Q's and K's on the same plate, how it was addressed and the absence of contamination and crosstalk. Members suggested a specific write-up on the

3130 as well as one for the data showing the lack of contamination on plates with both Questioned samples (Q's) and known samples (K's). Mr. Jenkins indicated the Unit has the data. Discussion continued regarding ways to run these types of plates, if at all. Members indicated how their laboratories ran sample plates and offered risk vs. benefit analysis of different ways.

Dr. Rudin suggested *"demonstration experiments"*. Write down what you expect and show that it works.

Ms. Knutson covered the topic of the *"comments"* column in the instrument software, and its value to function as an audit trail. Discussion continued regarding whether any cell is truly locked during re-extraction of data.

Ms. Meyer asked about default injection times and if separate run modules exist. Mr. Rodgers indicated that the Unit did have separate modules for both Xterm and Edge.

Ms. Knutson suggested that the Unit should more clearly define when capillaries will be changed, as well as how negatives will be injected and that it is consistent with the sample injection. Clearly state all of this in the protocol. Also, she indicated that this particular chapter might be an alternative area for spectral and spatial explanations and how-to.

Sample storage and re-injection will have to be addressed further in the manual.

Ms. Meyer asked how Unit will interpret data if multiple injections have been done. Can controls be used from one injection while samples from a different injection are used? Mr. Jenkins indicated that issue would be addressed in the interpretation chapter.

Chapter 8 – Sequence analysis / Sequencher

Dr. Rudin commented again on naming conventions for analysis software to manage data flow.

Discussion revolved around print-outs vs. electronic file saving. Mr. Rodgers indicated there would be a little of both and that the software can save data as PDF files.

Dr. Rudin stressed that the SOP's need to be clearly written.

Mr. Rodgers explained the Unit's print-outs and what data is captured in those to address specific questions members had. There was further discussion of nomenclature specifically in regards to keeping the naming of samples straight.

Individual Laboratory visits were conducted. Dr. Rudin commented that the physical plant/facility was excellent. Ms. Knutson indicated the lab was set-up as it should be and that the laboratory set-up should be captured in the SOP's.

Dr. Rudin addressed that a written report is required by 8:00am tomorrow and they should come to an agreement on major points before the end of the day.

Chapter 9 - Interpretation

Initial discussions regarding interpretation focused on amplification/sequence coverage. What will be considered full reportable coverage, two forward reactions, forward and reverse, do they come from separate extraction, separate amplifications etc. Members suggested and Mr. Jenkins agreed that separate amplifications are better. Ms. Knutson explained their lab's take on situation and suggested that the positive control will aid in interpretation.

The Unit will not use single strand data for exclusionary purposes.

Discussion ensued regarding which samples will be confirmed by a separate analyst. The Unit will modify SOP's to say all data will be re-aligned.

Ms. Knutson suggested that the interpretation level be clarified; what is above noise level and how it will be called.

Dr. Rudin expressed her feelings about contextual bias again and something the Unit should keep in mind as far as support for conclusions. Discussion ensued regarding how MN and AFDIL handle the interpretation of K's and Q's. Dr. Rudin strongly encouraged analyzing Q's first before K's. Dr. Rudin requested specific language in protocol addressing contextual bias. Mr. Rodgers indicated the software does not allow two contigs to be open at once and that may be a way to address contextual bias.

Discussion turned to reagent blanks and how they are interpreted. Mr. Jenkins attempted to explain the Unit's method with an illustration. There was extensive discussion regarding this as well as extensive discussion regarding contamination. Ms. Knutson indicated that, unfortunately, contamination occurs in mtDNA analysis. Dr. Rudin encouraged going back to re-extract if signal appears in blanks/controls, particularly if you are not limited by sample extract.

Ms. Knutson indicated most if not all mtDNA SOP's allow for contamination and indicated that conservation of sample is an important argument. Dr. Rudin encouraged transparency in the Unit and suggested several ways to account for or manage the problems regarding contamination in report writing. Members agreed to make a recommendation with separate opinions regarding matter. Issue was tabled.

Discussion turned to the presence or absence of a contamination log. Mr. Jenkins indicated the Unit did not maintain one and did not see the value, particularly in a mtDNA lab, since the information is contained within the case file. Dr. Rudin indicated the benefits she saw in maintaining one and encouraged the adoption of it. Ms. Knutson and Ms. Meyer addressed what their laboratories did in relation to this issue.

Discussion ensued regarding tracking of samples through multiple injections, which controls are used and what data from those multiple injections can be utilized. (eg. positive fails in one injection, but works in a subsequent one).

Dr. Rudin discussed her philosophy regarding the positive and negative control, she disagreed with the protocol regarding going back if the positive fails yet moving forward if the negative fails.

Dr. Rudin commented that she liked the Unit moving forward with the LA as a screening tool. Ms. Knutson suggested clarifying the interpretation of heteroplasmy with the LA.

Ms. Meyer suggested the Unit should utilize the IUPAC nomenclature for heteroplasmic sites.

Dr. Rudin liked the wording regarding interpretation of length heteroplasmy at HVII. Ms. Knutson did not like the wording at all. Extensive discussion ensued regarding interpretation of the HVII c-stretch. Dr. Rudin suggested the discussion be tabled until everyone had a chance to look at the data from her adjudicated case. Ms. Knutson suggested not utilizing the area at all as the community appears to be moving that way.

Ms. Meyer reiterated that Unit should indicate that all samples will be re-aligned by second examiner.

Members indicated that the protocol should have a lot more information regarding mixture interpretation.

Chapter 10 – CODIS / Popstats

Ms. Knutson suggested changing wording from forensic database to SWGDAM database.

Dr. Rudin agreed that 95% confidence interval is the best way to provide a statistic right now.

Discussion began regarding search parameters and which populations will be reported. Ms. Knutson suggested that we should report all populations if the mitotype is observed. Discussion ensued regarding the searching parameters and how things are done in the community. Dr. Rudin wanted to check with others in the community to help provide wording and methods for stat calculations in populations less than 100 samples.

Ms. Knutson cautioned the Unit regarding a search outside of HVI and HVII and that it would be beneficial to insure that the popstats calculation is correct for those instances.

Chapter 11 - Report Writing

Dr. Rudin wanted clarification within the report of what the term exclusion means. Mr. Jenkins suggested incorporating it into the METHODS section of the report.

Discussion turned to data appearing in the reports in the form of charts. Dr. Rudin would like to see all data reflected in the chart. Ms. Knutson suggested consistency. If you chart, chart it all, or leave the mitotypes out across the board. Mr. Jenkins attempted to explain the historical perspective of DFS and the interpretation of the Code of Virginia.

Dr. Rudin suggested changing the title of the main sections in "Report Writing" to eliminate *"inconclusive"*. Inconclusive = conclusion cannot be reached.

Dr. Rudin didn't like the use of the term *"consistent"* either*;* she suggested defining terminology more clearly.

There was extensive discussion regarding "most probative sample". How and when stats will be done, when the database will be searched; numerous examples regarding these situations were discussed.

Chapter 12 – Quality Control

Mr. Jenkins explained the Unit's procedure for peer review.

Ms. Knutson wanted the quality controls for the 3130*xl* defined more to incorporate spectral and spatial, changing out the array and associated descriptions of reasons to perform these tasks.

Ms. Knutson indicated that the Unit's QC of primers may be too extensive. Unit is essentially doing a sensitivity study each time, quite possibly overkill. May want to revisit after a year or so.

Ms. Knutson suggested that the Unit test HL60 with a control region amplification as it is a larger piece of DNA. In addition, add TE to critical extraction reagent.

Discussion ensued regarding utilization of bone for QC of the bone extraction procedure.

Mr. Jenkins explained which chemistries will have internal QC and which will not. He did not envision QC'ing Xterm, Edge gels, and formamide. Discussion ensued regarding the pros and cons of the issue.

Members did not comment on chapter 13.

<u>Return to Validation Data and Summaries:</u>

General comment was that summaries do not support protocol as written. The Unit has done the work but needs to more thoroughly explain the completed work in the summaries.

Dr. Rudin raised concern with Chelex again after seeing comment in validation paperwork. Mr. Rodgers explained that the comment was more of a concern for the quant than the extraction.

Mr Jenkins explained why electropherograms appeared as they did for the sensitivity studies. Combination of input DNA and injection time will sometimes result in a higher background.

Ms. Knutson commented on Body Fluid/Hair study and suggested that the SOP's should reflect that four washes will be conducted.

Ms. Knutson suggested elaboration within the concordance study since some differences do exist between the LA and sequencing.

Ms. Meyer suggested trimming primer data from contigs to reflect the true amount of data generated for the sample. She also indicated that if you have a longer read you might as well report it out.

Ms. Knutson indicated the Hair / Environmental study supports the request for more documentation from Trace section in light of the results.

Ms. Knutson mentioned and Dr. Rudin concurred that it would be beneficial to collect all data, as it appears that Unit has done a lot of work, and correlate it all to the various validation studies.

Numerous comments from members made regarding the validation studies and the need to further collate data to better support validation summaries. Dr. Rudin specifically mentioned that the summaries should be worded to answer the question of the validation study. She also suggested the removal of the word *"consistent"* from summaries.

At this point subcommittee members agreed to draw meeting to a close. Dr. Rudin discussed draft summary of recommendations that would go into the report to the SAC.

Dr. Rudin indicated she would provide annotated SOP's, and would generate a report that would reflect the differences of opinion. She commented that everybody had supplied a *"good faith effort"* and hoped that the Unit would incorporate the suggestions.

Mr. Jenkins adjourned meeting at 6:57pm.