Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Final Report

Volume 2 of 3

FY94

CAG Trip Reports

CAG Memos & Other Products

LANL Subcontract 9–X52-Z9658–1

Thu, Dec 15, 1994

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

FY94 Trip Reports

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9442

CAG: 919424301
LANL Subcontract: 9–X52–Z9658–1

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9442
Las Vegas, NV, Sun, Aug 28, - Wed, Aug 31, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Mon, Sep 19 - Wed, Sep 21, 1994
Tasks — YMP Underground Training

Trip Summary

Sun, Aug 28, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Mon, Aug 29, 1994

- Discussed the status of the FRD comment resolution with F Homuth. All comments have been resolved except C Newbury's (she has been out of town) and one comment of N Rector (LLNL). Rector is objecting to the IDCS saving all participant data, even checkout and preliminary data that is ultimately of no interest to PIs. His rationale is that an intervener may gain access to this data and criticise the PI for mistakes or goofing around. Our response is that IDCS distribution data sets are sent only to participant record centers. The PI then identifies the subset of the distribution data set that will be reported to DOE (via TDIF) as raw test data. Homuth will continue to negotiate this issue with Rector.
- Reviewed comment resolution text changes in the current revision of the FRD.
- Arranged to take General Underground Training with F Homuth at the FOC Sep 20-21, 1994.
- Received copies of M&O draft IDCS 90% review documents. They have requested informal comments by the middle of next week.
- Attended the scheduled Consolidated Sampling Database Closeout Meeting.
- F Homuth asked me to move the FRD document from the Mac to the IBM PC in Word for Windows v6.0.

Tue, Aug 30, 1994

- Finished the Closeout Meeting Report.
- Revised the FRD to include a new item in Section 3.5.3, Test Configuration Summary, to describe user reports covering test information (not test data).

Wed, Aug 31, 1994

- Met with F Homuth and K Lobo (SAIC) to discuss reversing of the DOE mandate on prohibiting remote users from connecting to the IDCS via modem as stated in the Jones/Simecka letter mandating use of IDCS for test data acquisition (drafted by K Lobo). Based on my description of the reason for the meeting, Lobo had contacted C Newbury for discussion of the issue prior to our meeting. He informed us that Newbury confirmed our suggested use of electronic data transfers and he concurred also. He suggested that Homuth send a letter to the S Jones letter distribution describing this change.

- Met with F Homuth and C Newbury to discuss several issues. After a brief discussion she accepted our response to her FRD comments. She suggested we add more clarification of the difference between IDCS verification of its internal data handling processes and participant V&V of their test data. She confirmed that DOE will not accept any participant having data deletion privileges for data stored in the IDCS. This will allow N Rector's (LLNL) FRD comment (reject by Homuth) to allow PIs to delete IDCS data to be resolved without his intended appeal "to higher authority". Newbury verified that she supports conditional electronic data transfers from IDCS. We shared a draft of the letter clarifying IDCS electronic data transfers suggested by Lobo with her and she concurred with the content and that it should be sent to the S Jones letter distribution list.
- Finished adding comment resolution text to the FRD.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9441

CAG: 919424101
LANL Subcontract: 9–X52–Z9658–1

Mon, Aug 29, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9441
Las Vegas, NV, Mon, Aug 29, 1994

Next Scheduled Trip

Gillian Hall
No trips scheduled for the remainder of FY94

Trip Summary

Mon, Aug 29, 1994

- Trip from CAG offices in Tempe., AZ to LANL TCO offices in Las Vegas, NV.
- Made the CAG presentation at the scheduled Consolidated Sampling Database Closeout Meeting.
- Prepared draft contributions to the Closeout Meeting Report.
- Returned to CAG offices in Tempe, AZ.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9440

CAG: 919422201
LANL Subcontract: 9-X52-Z9658-1

Wed, Aug 10, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9440
Las Vegas, NV, Sun, Aug 7, - Wed, Aug 10, 1994

Next Scheduled Trip

Jim Hall
Las Vegas, NV — Mon, Aug 29 - Wed, Aug 31, 1994
Tasks — Data management issues

Trip Summary

Sun, Aug 7, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Mon, Aug 8, 1994

- Discussed the status of CAG's new TCO support contract for FY95. A Burningham initiated work on a 1-year renewable contract on Fri, Aug 5, 1994.
- Received FRD comments from J Schelling (SNL) and N Rector (LLNL).
- Met with F Homuth and B Carlisle (M&O) to discuss M&O preliminary comments on FRD Sections 1-3.
- Started incorporating comments into the FRD.
- Discussed the proposed Sample Collection Information System (SIS) task closeout meeting with D Boak and her decision is to not have the meeting. I pointed out that design documentation was one of the items the TCO agreed not complete during the development cycle that produced the current application. Developing this documentation would take about 100 hours of G Hall's time. Due to other commitments she cannot work on this task until Oct. Unless this documentation is created in the next 3-4 months, it will have faded from memory and not be able to be reconstructed reliably. In the euphoria of delivering a successful product, it may seem that the knowledge gained from recent development team planning activities and limited available functional documentation will be sufficient to support and maintain this application for its lifetime. I believe this to be highly unlikely and strongly recommend that the TCO authorize the creation of this documentation to support future application maintenance.

Tue, Aug 9, 1994

- Continued incorporating comments into the FRD.
- Received comments from A Burningham, B Carlisle (M&O IDCS), and D Edwards (USGS). Other reviewers have failed to respond or have deferred to an active respondent. Only C Newbury's (DOE) comments are outstanding.
- Met with C Newbury to discuss her preliminary FRD comments. Her major concerns are:

1. Referring to the IDCS data storage as a database and providing easy participant access to the data will automatically enable the NRC to get the same easy access. When the NRC gets the data it will, by law, share it with the public. This comes about because the most recently revised DOE/NRC Site Specific Agreement, in a section authored by C Newbury, states that NRC has access to all Project databases without qualification. Her intention was that

this refer only to GENISES but it now seems that it points to any "general access" database. Sigh. We discussed a possible fix to allow participant access by identifying the IDS as a highly structured data collection and temporary storage system (no mention of databases) with strict access provisions excluding anyone except the owner of the data from access. This is an accurate description of the functional intent of IDCS and C Newbury feels will protect us from NRC access.

2. C Newbury is bothered by the relative easy access that PIs will have to unqualified test data. She is uneasy that this data may ultimately be used (by mistake) in quality effecting work. I pointed out that participant QA programs could and should include checks and controls to ensure that critical data sets are traceable to Project requirements independently of IDCS data access issues. Easy IDCS data access is meant to help the PIs do a good job by allowing users to avoid QA complications when checking on test conditions and performance. Verified data is available on request through the IDCS Data Manager at any time. It is just slower than logging on to the system and taking a look right now. It is somewhat annoying that after 10+ years of telling DOE our IDS/IDCS plans that logging on to the system and transferring has suddenly become such a risky move!

The IDCS team will do its best to save these capabilities, however, we may need help from the participant Labs to straighten DOE thinking out on each of these issues..

Wed, Aug 10, 1994

- Finished incorporating all comments, except those from C Newbury, into the FRD.
- Met with J Beckett (EGG). Their TFM task is finally starting up and he requested some time from G Hall for TFM support. I informed him that G Hall is not available for the remainder of FY94 due to lack of funds and her other commitments.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9439

CAG: 919420102
LANL Subcontract: 9-X52-Z9658-1

Wed, Jul 20, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9439
Las Vegas, NV, Sun, Jul 17 - Wed, Jul 20, 1994

Next Scheduled Trip

Jim Hall
Las Vegas, NV — Mon, Aug 8 - Thu, Aug 11, 1994
Tasks — FRD comment resolution and Data coordination

Trip Summary

Sun, Jul 17, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Mon, Jul 18, 1994

- Met with F Homuth and continued work on the new.rev 3.0-2 of the IDCS Functional Requirements Document (FRD) for testing. Our deadline was to complete the final draft in time to allow distribution to reviewers no later than Mon, Jul 25 with formal review comments due Fri, Jul 29.

Tue, Jul 19, 1994

- Continued to work with F Homuth to complete FRD rev 3.0-2.

- Met with F Homuth and R Oliver to resolve R Oliver's FRD rev 3.0-1 comments.

- Met with F Homuth and Ivan Cottle (SAIC) to discuss operations management at the ESF. Cottle shared the following information with us:
  1. W Simecka (DOE) has tasked W Wilson (DOE) to arrange operations for the site. Wilson selected Ken Thurman (SAIC) to form and head the new Yucca Mountain Maintenance Management Systems group.

  2. IDCS operation and maintenance will be part of his responsibility.

  3. Cottle recommended that we read the new *Yucca Mountain Operations and Management Plan* and *YAP 12.1* (tile unknown) for additional details on this effort.

  4. Thurman has a procurement underway for a large parts inventory database, named the Maintenance Management System (MMS), that will be the basis for maintenance activities allowing part identification, inventory, and usage to be documented for configuration control. He expects to make the initial MMS installation at the site in Jan95.

5. DOE has identified the Information Management System (IMS) oriented at Change Order tracking. Change Orders will be the official method for working on the ESF configuration. DOE expects that everyone doing work at the site will document their activities with this process. The IMS is expected to be installed in Jan95.

6. The M&O has moved ahead, identifying the task of O&M site management as their task. An individual M&O person will be appointed to O&M Manager in the next month or so.

7. The current plan is to have second tier O&M line managers responsible for each piece of equipment in the ESF configuration.

8. Each line manager will be responsible for day-to-day details. These individuals would come from the M&O, participants, REECo, and construction contractors as appropriate. These floor managers would be responsible for creating Change Orders and managing other details of maintenance tasks. The actual work could be done by any qualified person.

9. This whole process is going to be complex and cumbersome to get up and running smoothly. Cottle's expectation is that some pieces will be implemented and running in 1995.

Wed, Jul 20, 1994

- Completed the final draft the FRD rev 3.0-2.

- Provided F Homuth with a draft copy of CAG's FY95 TCO Technical Support Proposal to help identify CAG's FY95 Scope of Work and start contract actions.

- Returned to CAG offices in Carlton, OR.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9438

CAG: 919419501
LANL Subcontract: 9–X52-Z9658–1

Thu, Jul 14, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9438
Las Vegas, NV, Mon, Jul 11 - Thu, Jul 14, 1994

Next Scheduled Trip

Jim Hall
Las Vegas, NV — Sun, Jul 17 - Wed, Jul 20, 1994
Tasks — IDCS FRD comment resolution

Trip Summary

Mon, Jul 11, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, Jul 12, 1994

- Met with F Homuth to discuss FRD comments.
- Met with A Burningham for additional discussion on his comments.
- Continued to work on comment resolution and document rewrites.

Wed, Jul 13, 1994

- Continued to work on comment resolution and document rewrites.
- Met with F Homuth, B Carlisle (M&O), and K Ashlock (M&O) to discuss M&O comments about the new FRD. A meeting summary is in Attachment 1 below.
- Discussed the lack of progress on the CAG contract for FY95 with F Homuth. J Hall will run out of current FY94 funding in August or early September. G Hall will run out in July or early August and may not be able to finish her current task (Mapper database).
- Met with F Homuth and R Oliver to resolve R Oliver's comments. After comment resolution, I recommended that the TCO take the lead in recommending an Operations and Maintenance (O&M) strategy to DOE to be sure we get the highest quality support for testing data acquisition.

Thu, Jul 14, 1994

- Continued to work on comment resolution and document rewrites.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

CAG Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9437

CAG: 919419301
LANL Subcontract: 9-X52-Z9658-1

Tue, Jul 12, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9437
Las Vegas, NV, Sun, Jul 10 - Tue, Jul 12, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Aug, 1994
Tasks — Sample Collection Information System (SCIS) Closeout Meeting

Trip Summary

Sun, Jul 10 1994

- Trip from CAG offices in Tempe., AZ to LANL offices in Las Vegas, NV.

Mon, Jul 11, 1994

- Presented the latest version of the SCIS to D Boak, A Mitchell, and K Degner. Conducted a comprehensive walk-through demonstration of the updated SCIS application for K Degner, noting all changes requested by LANL and USGS and also noted bugs found during updating.

- Discussed the SCIS with J Hall. He offered several suggestions about user interface coherence, appearance, and data exchange verification issues between the site and the TCO. I incorporated the user interface items into a change list.

- Prepared a list of changes generated during application walk-throughs and discussions. Distributed the list to J Hall and K Degner for comment. Proceeded to implement the most immediate changes on the list.

- Met with J Beckett (EGG), C Bennett (EGG), and T Radermacher (EGG) regarding installation of the TFMDB (Paradox Runtime version) on M&O PCs. I agreed to provide EGG with a new set of disks containing a supervisor user name and password if there is time remaining after TCO work is complete. The idea behind this change is to reduce the amount of time needed to install the application on each workstation.

- Prepared a SCIS status memo and distributed a draft copy to J Hall and K Degner.

Tue, Jul 12, 1994

- Worked with K Degner making a detailed comparison of the original "Main Module" sample criteria data entry form (database file contents) with the current version of the "Mapper Module" sample criteria database file contents (application file COLLECT.FM). We discussed every field and documented all corrections needed to make the files match correctly.

- Modified both the original "Main Module" and the current "Mapper Module" sample criteria database file based on the results of the discussion with K Degner.

- Continued to work on implementing changes from the change list prepared Monday.

- Provided a copy of the most recent version of the SCIS to K Degner and D Boak.

- Returned to CAG offices in Tempe, AZ.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9436

CAG: 919417901
LANL Subcontract: 9–X52–Z9658–1

Tue, Jun 28, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9436
Las Vegas, NV, Sun, Jun 26 - Tue Jun 28, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Mon, Jul 11 - Tue, Jul 12, 1994
Tasks — Sample Collection Information System (SIS) Development (LANL)

Trip Summary

Sun, Jun 26, 1994

- Trip from CAG offices in Tempe., AZ to LANL offices in Las Vegas, NV.

Mon, Jun 27, 1994

- Presented the latest version of the Sample Collection Information System (SIS) database application for USGS mappers to D Boak, A Mitchell, and K Degner. Discussed new user requirements arising from discussions with S Beason (USGS).

- Hardware issues continue to go unresolved. An early decision to incorporate barcode scanning and printing equipment with the SIS application is being delayed until a workable version of the application has been completed and beta testing results are favorable. After testing, barcode scanners would probably be implemented first. A Mitchell and K Degner have decided that the application will not print barcodes and barcode printer investigations have stopped.

- USGS mappers currently use a DOS-compatible laptop with a monochrome display. The mapper database application requires a computer with a 256-color display. USGS has agreed to upgrade their laptop to meet this requirement.

- Discussed label layout and format with K Degner and A Mitchell. The "Wall Tags", labels fastened to the tunnel wall and photographed with the sample, will be produced independently of the SIS application. The "Shipping" and "Sample Tag" labels will be produced by the application and printed on the mapping platform. Switching between printer trays for plain paper and label stock will have to be resolved when the final printer is selected.

- Continued on-going discussions with K Degner and D Boak regarding defining Geologic Units Thermomechanical Units and determining the best representation of these units within the

application. The representation must support adequate search parameters and sample criteria definitions for data entry. S Beason has agreed to provide some input to help define both search parameters and sample criteria.

Tue, Jun 28, 1994

- Provided D Boak with a copy of a shareware communications application (Z Term). She intends to try this program out on her laptop for communications with the office when she is in the field.

- Tentatively resolved a number of issues regarding the specific content of selection menus within the SIS application. These included Sample Characteristics, Special Features, Sample Type, and Geologic Units. Geologic Units continue to be tentative pending additional input from S Beason.

- Made modifications to the SIS application based on discussions while I was in the TCO. I left a copy of the latest version of the application with K Degner and D Boak.

- Returned to CAG offices in Tempe, AZ.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9435

CAG: 919417801
LANL Subcontract: 9–X52-Z9658–1

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9435
Las Vegas, NV, Mon, Jun 20 - Fri, Jun 24, 1994

Mon, Jun 27, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Tue, Jul 12 - Thu, Jul 14, 1994
Tasks — IDCS FRD comment resolution and Data Coordination

Trip Summary

Mon, Jun 20, 1994
- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, Jun 21, 1994
- Met with F Homuth to work on completing.rev 3 of the IDCS testing Functional Requirements Document (FRD). Our deadline was to complete the final draft to allow informal office review starting Mon, Jun 27 with formal review copies distributed later in the week.

Wed, Jun 22, 1994
- Continued to work with F Homuth to complete the FRD.

Thu, Jun 23, 1994
- Continued to work with F Homuth to complete the FRD.

Fri, Jun 24, 1994
- Completed the final draft of the FRD.A portion of the document got corrupted and had to be recovered, adding to the stress of getting it done just-in-time, giving me the JITers.
- G Hall's work on TCO tasks has expanded beyond earlier expectations. Her work for EGG is minimal, and her principal task is D Boak's sample tracking database development. She will run out of funding before this task is done. I will discuss FY94 funding details and the FY95 contract proposal with F Homuth next week by phone and fax.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9434

CAG: 919416701
LANL Subcontract: 9–X52-Z9658–1

Thu, Jun 16, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9434
Las Vegas, NV, Tue, Jun 14 - Thu Jun 16, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Tue, Jun 28 - Wed Jun 29, 1994
Tasks — Sample Tracking Database Development (LANL)

Trip Summary

Tue, Jun 14, 1994

- Trip from CAG offices in Tempe., AZ to LANL offices in Las Vegas, NV.

Wed, Jun15, 1994

- Presented an alpha version of the FileMaker Pro sample collection and tracking system for USGS mappers. This application will be used by the mappers working on the mapping gantry behind the TBM. The system is tentatively dubbed *YMP Sample Criteria Information System* (SCIS or YSCIS? [why-sis]). In attendance at this presentation were D Boak, A Mitchell, K Degner, F Homuth, R Oliver, and J Hollins. The preliminary ideas were acceptable to all present. Discussion included minor changes to the user interface and ideas for communication between planned modules. These modules include separate mapper, field, and main (TCO resident) FileMaker applications. D Boak's Mac (available when she leaves Las Vegas for Los Alamos later in the summer) is a candidate for the field computer located in the FOC or a trailer at the N Pad. The field computer is planned to contain the complete field database and handle two way data updates and queries from the TCO via modem. SMF requirements covering the YSCIS mapper module conformance to generating forms matching the existing *SMF Sample Collection Report* and *Sample Transmittal Form* was discussed. Currently the information contained in these two SMF forms has been combined into the single *Sample Collection Report* form per the original TCO specs for the mapper application.

- Met with K Degner and A Mitchell regarding sample label layouts and label material. We discussed the work schedule covering mapper application development for the next few weeks. My next trip to the TCO will be focused on data entry and verification working with K Degner and D Boak. The mapper module task as now defined includes completion of the user interface including export, batch reporting, and label printing. We discussed the importance of using the same fonts on each computer running the YSCIS applications for consistent and repeatable results. This means that each machine needs to be equipped with the same Postscript or

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9433

CAG: 919416002
LANL Subcontract: 9–X52-Z9658–1

Thu, Jun 9, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9433
Las Vegas, NV, Tue, Jun 7 - Thu Jun 9, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Tue, Jun 14 - Thu Jun 16, 1994
Tasks — Sample Tracking Database Development (LANL)
Install Paradox Runtime version of the TFMDB at the FOC (EGG)

Trip Summary

Tue, Jun 7, 1994

- Trip from CAG offices in Tempe., AZ to LANL offices in Las Vegas, NV.

Wed, Jun 8, 1994

- Prepared discussion packets containing all screen shots of current version of the FileMaker Sample Tracking Database application.
- Met with D Boak, K Degner, F Homuth, and J Hall to discuss progress of the mapper module of the Sample Criteria Information System (FileMaker Pro application). Walked through the application using the screen shots. Discussed security without a specific resolution of requirements. The general consensus was that the current password controlled log-in implementation provides the desired level of security. Discussed the possibility of generating sample identification bar codes, bar coded labels, and the implied hardware requirements without resolution. K Degner will continue to check out SMF and mapper requirements to help resolve the issues of specific operational details on the mapping platform and at the SMF related to sample labels and sample distribution.
- Met with K Degner on progress resolving outstanding issues for impacting the application. He has researched bar code printers and labels and identified a label printer and label supplier that would suit the mappers needs.

Thu, Jun 9, 1994

- Met with D Boak and K Degner to discuss the Sample Collection Form layout. D Boak had prepared a major rework of this form incorporating new field grouping logic.

- Met with K Degner and A Mitchell to discuss sample label layouts and label material. A Mitchell is enthusiastic about the prospect of printing bar coded labels for the mappers. They are working on a materials list to identify all needed items. We discussed next weeks application development schedule. A Mitchell is anxious for a presentation of a working version (nearly complete?) next week. I agreed to do my best, however, each step on this development task is being done on a fast track and will be done ASAP, when ever that is.
- Met with D Boak to discuss my work schedule. She requested a presentation next week and asked me to fax her a description, date, and time. She affirmed that July 1 is still the target date for the completed beta version of the mapper module. This date is tight and still seems possible with many late hours. Sigh.
- Returned to CAG offices in Tempe, AZ.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

TrueType fonts from the same manufacturer to have the best results, transparent portability between PCs and from PCs to Macs, and minimize software maintenance. Very important! New HP printers that may have some advantage for this application need to be investigated.

- Modified the current version of the mapper module to conform with changes emerging from the presentation meeting.

Thu, Jun 16, 1994

- Drove to the FOC to meet with SAIC personnel and install the runtime TFMDB application.
- Met with Clay Raedeker (SAIC). We discussed FOC personnel involvement in TFM as-built data entry. Installed the runtime TFMDB application (Paradox Runtime v4.5) on C Raedeker's PC. The runtime version, as were all earlier versions installed at the at FOC, is a single user application (path root C:). C Raedeker's preference is for a network version (path root O:). The runtime batch file will have to be modified to remake the runtime module and this could not be done at the FOC. Sigh. Single user installation was completed and I told him that we would look into making a network compatible runtime version for his network server.

  C Raedeker was enthusiastic about FOC personnel involvement in the TFM task. He mentioned that a number of new hires would be coming to work soon and one of them would be assigned to do TFM data entry. He had a few suggestions for improving the application, especially data integrity protection following transmittal to the TDB. I will discuss these issues with EGG to determine their inclusion in the TFMDB modification wish-list on my next trip.

- Returned to TCO offices in Las Vegas.
- Met with D Boak regarding continued progress on YSCIS application development priorities. She requested that I work on the main (TCO resident) module some by Mon, Jun 27. She wants her current data imported and the reports cleaned up.
- D Boak asked me to look into her get her Mac Duo Express Modem checked out and ready for use in the field. I borrowed her software and the Apple Express Modem manual and will report back to her with a "how to" session later.
- Replaced the floppy drive in CAG's Mac SE/30 at the TCO.
- Returned to CAG offices in Tempe, AZ.

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9432

CAG: 919416101
LANL Subcontract: 9–X52-Z9658–1

Fri, Jun 10, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9432
Las Vegas, NV, Mon, Jun 6 - Thu, Jun 9, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Tue, Jul 5 - Fri, Jul 8, 1994
Tasks — IDCS and Data Coordination

Trip Summary

Mon, Jun 6, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, Jun 7, 1994

- Met with F Homuth to discuss status of IDCS work. After preparation of responses to the M&O IDCS review and the studies submitted earlier my top priority should be finishing a new version of the IDCS Functional Requirements Document (FRD) for testing.
- Started preparation of comments for the M&O 50% IDCS review.
- Had a brief IDCS discussion with R Oliver encouraging him to support IDCS now that DOE had reaffirmed their intention that participants will use the system. The TCO's and participants best interests will be served by the TCO adopting a positive leadership role consistent with getting a good system, delivered on time from the M&O rather than just "giving them rope" and hoping they will fail or go away.

Wed, Jun 8, 1994

- Discussed FY95 CAG Scope of Work (SOW) with F Homuth. The TCO prepared SOW planned for 2 weeks ago has again been delayed with no new target date. Much more delay will result in a late contract negotiation. CAG will submit a draft proposal to F Homuth later this month.
- Met with D Boak, G Hall, and K Degner to discuss Sample Collection Criteria Database (SCDB) issues. The following were part of the discussion:

1. G Hall described the current state of the database project.
2. K Degner presented a new SMF sample control form that may impact the database. He also raised the question of how SMF distribution of parts of a single sample will affect the database controls.

3. The consensus was that SMF distribution is beyond the scope of this task. The SCDB is a TCO management tool to aid the mappers in identifying and correctly matching samples with PI requests and tracking this process up to the SMF.

4. D Boak outlined the task schedule;
   SCDB ver 1.0 is due June 30, 1994
   SCDB debugging and feedback from the SMF due July 1, 1994
   SCDB on-line and workable from the TBM mapping station August 1, 1994

5. D Boak emphasised the need to keep the system simple (and cheap) as possible at least for the initial installation. The consensus was that floppy disk data transfer will be used initially with a portable PC used at some later date and a network as blue sky, probably never implemented.

6. Printing forms and/or labels on the mapping gantry is not firmed up yet. K Degner will continue to check into labels, printers, and coordinate the labeling needs with the SMF.

7. D Boak observed that a logic flow chart is needed of the final FileMaker application and maybe of the whole process.

8. G Hall will be back on Tue, Jun 14, 1994 to demo her latest SCDB.

- Finished IDCS 50% review comments.

Thu, Jun 9, 1994

- Assisted F Homuth with the preparation of the test scheduling information requested by the M&O to support IDCS planning.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9431

CAG: 919414702
LANL Subcontract: 9-X52-Z9658-1

Fri, May 27, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9431
Las Vegas, NV, Fri, May 27, 1994

Next Scheduled Trip
Gillian Hall

Las Vegas, NV	Mon, Jun 6 - Wed Jun 8, 1994
Tasks	TFM Database Transition to EG&G
	Test Planning Database Development (LANL)

Trip Summary

Fri, May 27, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.
- D Boak, A Mitchell, and K Degner regarding the FileMaker project. Discussed Steve Beason's meeting with Deirdre. He is apparently very excited about the proposed system. In addition, the SMF is apparently committed to assigning us a block of bar code number for use in the system. Discussed action items, clarified questions regarding users, user interfaces, user priviledges, and intallation environments.
- Met with D Boak individually regarding continued progress on completing priority areas. Discussed hardware issues and her concern about costs. Discussed specifics of the work I had done since my last trip and gained a clearer understanding of her reporting requirements.
- Met with Chris (EG&G) regarding TFMDB transition progress. Chris has successfully created an application in Windows 4GL (for Ingres). His application is nearly identical in design to the Paradox version. I gave him an updated data dictionary for the Paradox tables.
- Assisted S Thornton in translating some DBF (DBase) files into ASCII text format for a project he was working on. He was unable to perform the translation with software available to him. I used FileMaker to successfully perform the task.
- Met with A Mitchell and K Degner again to discuss their progress on action items identified earlier in the day. A Mitchell and D Boak will be in New Mexico all of next week. Reviewed current task status and set goals for my next trip to LANL's offices.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9430

CAG: 919415101
LANL Subcontract: 9–X52-Z9658–1

Tue, May 31, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9430
Las Vegas, NV, Mon, May 23 - Wed, May 25, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Mon, Jun 6 - Thu, Jun 9, 1994
Tasks — IDCS and Data Coordination

Trip Summary
Sun, May 22, 1994
- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Mon, May 23, 1994
- Met with F Homuth to discuss the results from last weeks meeting with DOE and EGG about continuing work on TFMDB projects. Within the current CAG contract, SubTerra is under-running approximately $15K. These funds could be available for funding G Hall for remaining FY94 work. F Homuth had no objections to this idea and we scheduled a meeting for later in the day pending N Elkins availability.
- Received three M&O draft engineering studies of IDCS data rates, network, and requirements. Preliminary reading shows that their projected data rates for testing are high but OK; however, their data rates for mine safety, conveyer operation, TBM performance, etc (called FM&CS data by the M&O) are ≈10X higher than test data rates. This is a surprising outcome since the value of this information has not been the subject of general discussions. The network analysis has the correct conclusion, bad justification. Their requirements analysis is an attempt to replace the FRD and is directed at the system they want to build. It contains several simplifications of FRD requirements that need review by the TCO.
- Met with F Homuth, B Carlisle (M&O), J Leak (M&O), and J Salchak (M&O replacing L Engwall) to discuss TCO and M&O response to the recent DOE letter directing Participants to use IDCS.
- Met with N Elkins, F Homuth, C Breeds, and R Oliver to discuss re-allocating $15K of CAG contract funds from C Breeds to G Hall. C Breeds confirmed that he will under run that amount during FY94. His current work plans with R Oliver through the end of FY94 will not be impacted by this under run. R Oliver wanted the specific tasks G Hall worked on with EGG

be impacted by this under run. R Oliver wanted the specific tasks G Hall worked on with EGG clearly identified. It was noted that G Hall's work on TCO tasks has increased recently and all agreed that her work on TCO tasks will take priority; time and funding for EGG tasks will be on an as available basis. N Elkins asked that G Hall costs covered by C Breeds under run be charged to B-Codes currently used for SubTerra cost reporting.

Tue, May 24, 1994

- Met with F Homuth, C Breeds, and briefly with R Oliver to develop the data coordination strategy for new test planning documents. C Breeds was tasked to put together a draft reporting form that documents test instrumentation and data acquisition methods at installation. The form is expected to be filled out in the field by PIs or LANL field personnel. The intent of the form is to document individual instrument type, location, calibration confirmation, data acquisition identification, and data description.
- Started a response to the M&O data rate analysis.

Wed, May 25, 1994

- Worked with F Homuth to prepare the test scheduling information requested by the M&O to support their IDCS planning.
- Continued work on the response to the M&O data rate analysis.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9429

CAG: 919413602
LANL Subcontract: 9–X52-Z9658–1

Mon, May 16, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9429
Las Vegas, NV, Mon, May 16, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Thurs, May 27, 1994
Tasks — TFM Database Transition to EG&G
Test Planning Database Development (LANL)

Trip Summary
Mon, May 16, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.
- Met with R Oliver, D Boak, F Homuth, A Mitchell regarding high level concepts of the FileMaker project as a whole. Presented a graphic representation of major components of the project and how they interface. Discussed progress on the project and my continued optimism regarding FileMaker as an appropriate tool to be using at this point in the development process. R Oliver expressed reservations about FileMaker.
- Met with R Oliver to discuss the Test Planning database project as a whole. He showed me Access (PC relational database from Microsoft). It looked like a nice product to me. R Oliver is currently Access as a flat file database. We discussed the differences between flat file and relational database design. R Oliver has serious misgivings about FileMaker's involvement in this project for reasons I don't understand. We discussed some specific data concerns I had as a result of examining some of the adminstrative files he had given me. R Oliver wanted it understood that portability of data (cut and paste portability, not data export) between the database, Excel, and Word is extremely important to him.
- Met with D Boak individually regarding continued progress on completing priority items in the FileMaker project. Discussed R Oliver's reluctance to support the project.
- Met with J Beckett and Chris (EG&G) regarding TFMDB transition progress. Chris is continuing having trouble with the exported memo fields. Because the FOC is currently the only customer of the Paradox TFMDB (and the FOC does no memo field data entry), J Becket decided to proceed with the run-time version and with finalizing data transfer facilities *ignoring* memo fields. I am satisfied with this decision. It will expedite completion of the project and sets aside a portion of the job which is inapplicable at this point anyway. Chris gave me a disk with a test file (exported from Ingres) which I will use to debug the import

project and sets aside a portion of the job which is inapplicable at this point anyway. Chris gave me a disk with a test file (exported from Ingres) which I will use to debug the import facilities of the Paradox TFMDB.

- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9428

CAG: 919413302
LANL Subcontract: 9–X52-Z9658–1

Fri, May 13, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9428
Las Vegas, NV, Thu, May 12 - Fri, May 13, 1994

Next Scheduled Trip
Gillian Hall

Las Vegas, NV	Mon, May 16, 1994
Tasks	TFM Database Transition to EG&G
	Test Planning Database Development (LANL)

Trip Summary

Thurs, May 12, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.

Fri, May 13, 1994

- Met with R Oliver, D Boak, F Homuth regarding progress on Test Planning Database (FileMaker Project).
- Met with A Mitchell and D Weaver regarding their areas of interest in the FileMaker project.
- Met with D Boak individually regarding immediate products to produce and priority areas in which to focus attention. Went over details of TPP and JP data to be captured. Brain stormed regarding integration of mapping platform in the tunnel (i.e. sample collection).
- Delivered administrative FileMaker files derived from Excel files R Oliver gave me on my last trip.
- Met with J Beckett (EG&G) regarding TFMDB transition progress. Expressed (again) my need for a test file output from the Ingres database in order to test data transfer facilities implemented in Paradox. Jim promised a disk by next Monday.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9427

CAG: 919413301
LANL Subcontract: 9–X52-Z9658–1

Fri, May 13, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9427
Las Vegas, NV, Wed, May 11 - Thu, May 12, 1994

Next Scheduled Trip

Jim Hall
Las Vegas, NV — Mon, May 23 - Wed, May 25, 1994
Tasks — Data Coordination

Trip Summary

Wed, May 11, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Thu, May 12, 1994

- Met with F Homuth and C Breeds to discuss test coordination data issues. C Breeds current work tasks (from R Oliver) include compiling detailed test related information that may provide useful help in developing data coordination issues.
- Met with N Elkins, C Newbury (DOE), an unidentified DOE person accompanying C Newbury, E Ezra (EGG), and J Beckett (EGG) to discuss and resolve the CAG participation and funding issues to support EGG. The discussion centered principally on EGG plans for the TFMDB, C Newbury's assessment of TFMDB importance, and N Elkin's interest in potential value of CAG work for EGG to the TCO. Meeting issues are summarized as follows:
  1. C Newbury recognizes the TFMDB work as important. DOE currently has an outstanding CAR for non-performance of the TFM process. The lack of an operational TFMDB has hurt the TFM effort.
  2. C Newbury agreed to support completion of the TFMDB for FOC data entry if;
     a. completing the task did not incur additional net cost to the project (funding by re-allocation of existing budgets)
     b. the task was completed in a timely manner by the end of June, 1994
     c. the decision to use CAG for EGG work is up to N Elkins and Los Alamos
  3. J Beckett identified the TFMDB work as useful and nearly complete; however, finishing the application was C Newbury's decision. EGG would be satisfied with finishing the task now or stopping TFM work until October, 1994.

4. J Hall made the following points:
   a. The TFMDB has been stalled because of the FOC's inability to procure a copy of the Paradox database application. The delay has to do with the need for verification of all commercial software before it is placed in service.
   b. CAG can provide a run-time Paradox application for the FOC for some time. This run-time is a stand-alone encapsulation of the TFMDB and does not require the Paradox application to be present on the FOC computer.
   c. The FOC TFMDB application is about 98% complete and could be finished quickly (by June 1, 1994) if we can get CAG and EGG resources committed and coordinated.
   d. Having the FOC TFMDB operational would provide a needed focus for TFM field activities and a measurable indicator of participation.
   e. CAG is low on contract funds to continue work on TFMDB and other TCO tasks. We need clarification of our work tasks and additional budget to support the identified work.
5. N Elkins made the point that the EGG work has no immediate value for the TCO. He will not make any funding additions to the CAG contract to support TFM work, even though the TFMDB front end work would result in a model application for TCO TDB queries for other information as requested by R Oliver.
6. C Newbury summed up the meeting as follows:
   a. Work should continue on finishing the FOC TFMDB if it can be finished in a timely manner and installed around the end of October, 1994.
   b. DOE will not identify the additional TFMDB work as more important than work already identified and funded for FY94. Funding must be accomplished by re-allocating existing funds.

- In a post-meeting discussion with N Elkins he agreed to support re-allocating unused funds in the CAG contract to G Hall for work on the TFMDB task. This reallocation would have to be agreed to by F Homuth and R Oliver after discussion of impacts on their tasks. I will investigate this possibility and report back to F Homuth and N Elkins next week.
- In post-meeting discussion with E Ezra she indicated that there may be a way to transfer a small amount of funding to the TCO specifically to support G Hall's EGG support work. Hmm; maybe and I won't be holding my breath this time.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9426

CAG: 919412602
LANL Subcontract: 9–X52-Z9658–1

Fri, May 6, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9426
Las Vegas, NV, Wed, May 4 - Fri, May 6, 1994

Next Scheduled Trip

Gillian Hall
Las Vegas, NV — Thu, May 12 - Fri, May 13, 1994
Tasks — TFM Database Transition to EG&G
Test Planning Database Development (LANL)

Trip Summary

Wed, May 4, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.

Thru, May 5, 1994

- Met with J Hall regarding ongoing EG&G TFMDB projects. Discussed outcome of meeting between J Hall, EG&G, and DOE regarding funding for ongoing CAG work with EG&G.
- Met with C Breeds regarding his ongoing thoughts on the Test Planning Database Project. Discussed obtaining Design Parameters data for integration.
- Presented progress on Test Planning Database project (in FileMaker Pro) to J Hall, C Breeds, F Homuth, R Oliver, and D Boak in D Boak's office. Discussed suitability of FileMaker for the project and advocated sticking with it for now. Reasons being that FileMaker is performing the task satisfactorily, it is easy to learn and use (very important to LANL personnel), and it is economical as a rapid prototyping tool.

Fri, May 6, 1994

- R Oliver gave me several large Excel spreadsheets containing administrative data (e.g. Fax logs, document lists, TWS numbers) and asked me to integrate them into the FileMaker project.
- Met with J Beckett (EG&G) regarding TFMDB transition progress. Installed new version of application in which export/update facilities have been improved and table structures have been modified in some cases. Gave J Beckett an updated data dictionary and mapping tool for files produced by TFMDB's export facilities. Expressed (again) my need for a test file output from the Ingres database in order to test data transfer facilities implemented in Paradox. J Beckett promised a disk by next Monday.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9425

CAG: 919412901
LANL Subcontract: 9–X52-Z9658–1

Mon, May 9, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9425
Las Vegas, NV, Mon, May 2 - Fri, May 6, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Wed, May 11 - Thu, May 12, 1994
Tasks — TFMDB and Data Coordination

Trip Summary

Mon, May 2, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, May 3, 1994

- Met with F Homuth and C Breeds to discuss test coordination data issues.
- Attended TCO staff meeting.
- Met with F Homuth, N Elkins, D Boak, R Oliver, and C Breeds for the planned *Test Management and Data Coordination Meeting*. The results of the meeting are summarized below:

1. The TCO mission is to plan and coordinate logistical issues for assisting PIs to implement their tests. The TCO verifies that PI test planning includes sufficient detail to successfully field the test and that the PI has addressed regulatory, Project, and QA requirements that apply the the activity. The TCO does not verify, validate, or judge the correctness of testing programs. The TCO does not manage or integrate testing programs. The TCO does not take or receive data or specimens. These items belong to the PI and are the PIs responsibility.
2. After some discussion it was decided that the TCO will maintain their role as IDS Data Manager. Action to develop a Data Management Plan is currently on hold.
3. Performing the PI Interface development for IDS requirements requested by the M&O is on hold until it is determined that the M&O will be building an IDS.
4. There was discussion about the details of how the TCO will deal with planning information for new Test Planning Packages. An effort needs to be made to expand current reporting to include some information captured in the old IDS design and not currently included in the new implementation of IDCS by the M&O. The following items were identified for further consideration:

a. instrument identification or verification at test installation
b. instrument location
c. instrument operation verification
d. test definition details (PI, installer, high-level connection diagram, data recording via IDCS, notebook, PI datalogger, etc)

- Fixed a program launching problem and installed current versions of FileMaker pro and HyperCard on F Homuth's Mac.

Wed, May 4, 1994

- Met briefly with N Elkins and F Homuth to discuss criteria for developing data coordination information for inclusion in test planning documents and reports. N Elkins reviewed the basic mission of the TCO as supporting PI activities, not interfering, directing, or taking over PI responsibilities.
- Worked with F Homuth to develop specific data coordination criteria.

Thu, May 5, 1994

- Worked with F Homuth to prepare the agenda for the scheduled *Test Management and Data Coordination Meeting.*
- Worked with F Homuth to further develop slides for his presentation at the coming M&O Ventilation Value Engineering Study. C Breeds joined the discussion with more details on planned M&O instrumentation for ESF ventilation.

Fri, May 6, 1994

- Met with EGG to discuss the plans for CAG participation in TFMDB work and other TDB related tasks during FY94. Although EGG is interested, they don't seem to be able to come up with funds directly. A meeting with C Newbury is still needed.
- Contacted C Newbury (DOE), E Ezra (EGG), and N Elkins (via K Cambern) to set up a meeting net Thu, May 12, 1994 to discuss and resolve the CAG participation and funding issues to support EGG.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9424

CAG: 919411201
LANL Subcontract: 9–X52-Z9658–1

Fri, Apr 22, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9424
Las Vegas, NV, Mon, Apr 18 - Fri, Apr 22, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Mon, May 2 - Thu, May 5, 1994
Tasks — Data Coordination

Trip Summary

Mon, Apr 18, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, Apr 19, 1994

- Met with F Homuth and C Breeds to discuss recent IDS developments and work plans for the remainder of FY94.
- Met with F Homuth and J Cerny (M&O IDS) to discuss M&O strategies for FY 94-95. The principal issues discussed were IDS support for TCO identified requirements for SNL CM Test and M&O monolithic design strategies oriented at designing the complete IDS before proceeding with the portion needed for SNL. J Cerny shared some current M&O planning documents identifying IDS alcove locations for construction Phase 2C. We reviewed SNL requirements and the only missing information Cerny could identify that would complete the M&O documentation for CM is vibrating wire (VW) instrument part numbers and ranges. VW data acquisition interfaces are identical (for one manufacturer) with hardware or software scaling used to adjust individual instrument full scale ranges. Individual gage specifications are not critical for the M&O design effort, however, it is probably a small matter to furnish the instrument part numbers to the M&O to stop their whining. We discussed the need for FY95-96 testing IDS support to be simple, on-time, and meet project acceptable budget constraints. I recommended again that they use a pre-engineered data acquisition system (e.g., Conspec) to expedite delivery and identify EGG as the system Operations and Maintenance contractor starting in FY95 and in the long term as their system integrator. These two strategies will enable the M&O to perform successfully and support the TCO and Participants in a timely and economical manner.

- Met with N Elkins, F Homuth, R Oliver to discuss the TCO strategy for supporting IDS. The focus were issues detailed in the memo from J Hall to N Elkins, *Recommendation that the TCO to take the lead with IDS*, 2 pgs, dated Thu, Apr 07, 1994. The summary of the IDS discussion was as follows:

1. N Elkins stated that the TCO will no longer pro-actively support developing IDS
2. The TCO is funded and tasked for IDS interface activity to support testing interests in FY94. Our current obligation is limited to responding to M&O inquiries with minimal impact to current TCO assignments. No major IDS deliverables will be completed in FY94.
3. R Oliver asked to be added to the distribution of all CAG documents.
4. N Elkins outlined the projected testing activities the TCO will support through FY98 as follows:
   a. 7 Alcove tests
      Alcove #1
      Bow Ridge
      Contact 1
      Contact 2
      Drill Hole Wash
      Ghost Dance 1
      Ghost Dance 2
   b. 1-2 Thermal/Mechanical Tests
      N Ramp extension
   c. ? Stations for Construction Monitoring
      N Ramp
      Extension
      Main
      S Ramp
   d. Heated Block

5. We discussed the up-coming M&O ventilation VE Study and F Homuth's participation. J Grant (SNL) has requested that F Homuth represent SNLs interests at the study. SNL would like to use M&O and other's data in their ventilation and (moisture) mass balance tests to avoid duplication of instrumentation and data monitoring where possible. The M&O apparently expects SNL (and perhaps other PIs) to define an extensive monitoring program that would be part of their IDCS activities to gather IDS Common Data. Our consensus was that for this data to be of value to PIs, it must be collected and managed under a QA program. For the TCO to represent SNL ventilation data needs SNL must document their needs in detail (design the test) and needed QA controls. Guidance was given as follows:

   a. It is SNL's responsibility to define their requirements. The design of their ventilation test hasn't even started.
   b. There are no SNL or other Participant requirements for ventilation measurements or data (at this time)
   c. Participants may want to use Common Data. They will review available data as their needs develop and use what they need. Participants will install additional instrumentation to support their Test Plans as needed.

d. To use non-QA ventilation data SNL must document that this data is compliant with Project safety and permit related constraints related to their test.
e. To understand ESF constraints on data usage, SNL could formally request that REECo provide documentation on what systems are in place to meet general regulatory and permit requirements.

Wed, Apr 20, 1994

- Met briefly with N Elkins and F Homuth to discuss criteria for developing data coordination information for inclusion in test planning documents and reports. N Elkins reviewed the basic details that we need follow and subsequent discussion with F Homuth resulted in the following items to document, track, and verify during the test planning process:

1. test measurement data to be acquired has been identified
2. measurement accuracy, resolution, bandwidth, and rate have been determined
3. measurement methods are defined
4. instruments and/or transducers identified
5. instrument and transducer calibration strategies have been determined
6. the method of data acquisition has been identified
7. data acquisition equipment resources are identified (i.e., procurement or on-hand)
8. funding for measurement support is available (e.g., instruments, data acquisition equipment, cables, software, spares, periodic calibration, installation, & maintenance)
9. QA controls for the planned measurement program and subsequent Participant data management activities are complete or planned completion dates are acceptable
10. necessary procurements have been scheduled to provide deliveries in a realistic and timely manner
11. the planned measurement schedule

During testing, additional data measurement related activities will need to be tracked as follows:

1. formal start of test measurement activities differentiated from installation, start-up, calibrations, checkout, and/or repairs
2. actual test measurement schedule
3. the start and end of test measurements cycles
4. the end of test measurement activities
5. demobilization instrument retrieval (if any)
6. final calibration or verification of instruments and equipment
7. final disposition of test measurement instruments and equipment

Thu, Apr 21, 1994

- Worked with F Homuth to prepare the agenda for the scheduled *Test Management and Data Coordination Meeting.*
- Worked with F Homuth to further develop slides for his presentation at the coming M&O Ventilation Value Engineering Study. C Breeds joined the discussion with more details on planned M&O instrumentation for ESF ventilation.

Fri, Apr 22, 1994

- Met with E Ezra (EGG), J Beckett (EGG) for a brief discussion of additional funding to support CAG continued support for EGG TFMDB database activities beyond transition of the TFM task.
- Worked on D Boak's sick Mac Duo.
- Returned to CAG offices in Carlton, OR

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9423

CAG: 919411202
LANL Subcontract: 9–X52-Z9658–1

Fri, Apr 22, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9423
Las Vegas, NV, Fri, Apr 22, 1994

Next Scheduled Trip
Gillian Hall

Las Vegas, NV	Thur, May 5 - Fri, May 6, 1994
Tasks	TFM Database Transition to EG&G
	Test Planning Database Development (LANL)

Trip Summary
Fri, Apr 22, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.
- Met with J Hall regarding ongoing EG&G TFMDB projects. Discussed outcome of meeting between J Hall and E Ezra (EGG), and probability of CAG proceeding with TFMDB PC-based front-end development for remote users. Prognosis not very positive on that issue.
- Met with C Breeds regarding his role in the developing Test Planning database project. Explored his perception of job structure and found his thinking to be very high level (administrative, conceptually emphasis) compared to lower level data capture and system development activities (operations emphasis) in which I am engaged with D Boak.
- Met with D Boak regarding Test Planning database development in FileMaker. Demonstrated progress to date which encompases Test Activity portion of database. Discussed changes and additions to work already completed. Gathered detailed information about TPP portion of database and agreed to start work on that component. Discussed a presentation to the office of progress and plans for the FileMaker implementation of this system.
- Reinstalled system software on D Boak's Macintosh, identified files causing machine to bomb at start-up, removed those files to a "Trouble" folder called "Bad! Cause Bomb!" in the System folder. Machine working fine when I left.
- Attempted contact with EG&G (particularly E Ezra, J Beckett) to no avail. They were all pretty busy up there on Friday.
- Met with R Oliver and D Boak regarding Ron's desire to use FoxPro for the Test Planning database project and his frustration with that product. I agreed with him on the issue of FoxPro's not being ideal for the TCO's needs. I voiced my opinion that the Test Planning

has been expressed to me as critical by D Boak. Products such as FoxPro, Paradox Windows, and Access Windows provide relational facilities but are much more difficult to use especially in terms of user interface development.

- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9422

CAG: 91941052
LANL Subcontract: 9-X52-Z9658-1

Fri, Apr 15, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9422
Las Vegas, NV, Fri, Apr 15, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Fri, Apr 22, 1994
Tasks — TFM Database Transition to EG&G
Test Planning Database Development (LANL)

Trip Summary
Fri, Apr 15, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.
- Met with J Beckett and discussed TFMDB data transfer issues. We developed a new strategy to overcome current difficulties involved in transferring data both to and from the Paradox application. Paradox's poorly supported "memo" fields continue to cause problems.
- Met with Todd Rademacher (EGG) regarding CMS database design and other issues involved in moving this task ahead. T Radermacher indicated that QA issues were of concern to E Ezra, although he was not sure what impacts there are.
- Met with E Ezra (EGG) regarding CMS the database design ideas I submitted to to T Rademacher for the CMS. She indicated that the design must include a tracking mechanism for every data element captured in the TDB and mapping of each data element back to specific hardware and software purchases and implementations. This is the CMS QA issue. We discussed progress on the estimate for TFMDB PC-based front end development work to support remote users such as the FOC and M&O.
- Met with D Boak regarding Test Planning database development in FileMaker.
- Installed Excel 4.0 on F Homuth's Macintosh.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9421

CAG: 919409801
LANL Subcontract: 9–X52-Z9658–1

Fri, Apr 8, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9421
Las Vegas, NV, Mon, Apr 4 - Thu, Apr 7, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV Mon, Apr 18 - Thu, Apr 21, 1994
Tasks Data Management, IDS

Trip Summary
Mon, Apr 4, 1994
- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Tue, Apr 5, 1994
- Attended TCO staff meeting.
- Attempted to installed a new TCO copy of Excel on F Homuth's Mac. Disk 2 of the 7 disk set was defective. Called Microsoft and they said there were other reports from LANL of bad Excel disk 2 problems. Microsoft will send a complete new disk set to F Homuth.
- Discussed the current state of IDS with H Kalia. There is still no clear direction in DOE about the status of IDS. This is a critical time to resolve TCO support for IDS. With TBM startup on schedule, test data acquisition issues will be resolved as working decisions soon.

Wed, Apr 6, 1994
- Delivered ESF FileMaker database to D Boak, *Test Planning Prioritization.*
- Met with R Rosche (M&O) and B Carlisle (M&O) to discuss the current status of IDS. F Lane (M&O) is not working on IDS and may be permanently lost to the effort. The design of the ICS portion is far behind schedule. R Rosche finds the proposal to use Conspec equipment (pending a more thorough evaluation) for FY95-96 a good idea. He feels that the group has too much to do and cannot meet the testing schedules in any other way than to buy a complete system such as Conspec's. In a separate discussion with B Carlisle he reiterated that he will not support buying Conspec equipment for testing. His position is that there is now an IDCS and if Conspec can bid and win the job to build the whole IDCS then we will use Conspec. Otherwise to hell with them. He feels that if the TCO requests the M&O buy Conspec or any other fully engineered system specifically oriented at test data acquisition they will be telling him how to do his job and he will oppose the procurement. He beleives a Conspec system to be "unintegrated" and unacceptable in the sense that it would stand alone from the rest of IDCS

and consequently not be part of a physically unified system. He was quick to point out that if J Nesbit (M&O) told him to buy Conspec he would do it in an instant. Carlisle went on to make the point that IDS cannot succeed with strong support from N Elkins. This is true. Carlisle's limited vision of what constitutes an integrated system is hurting progress on understanding how the M&O IDS team can supply test data acquisition in a timely manner. It would be best to deal with J Nesbit directly on this matter. He seems to have a much more savvy understanding of IDS issues and the realities of getting equipment to the field. R Rosche informed me that they are having a hard time getting an equipment catalog from Conspec. This delay has created some hard feelings toward Conspec. I have loaned them my copy of a Conspec catalog until theirs arrives.

Thu, Apr 7, 1994

- Met with D Boak to discuss the status of the FileMaker database work we are doing for her. She wants help from G Hall to move ahead with completing the current task and starting a consolidated sampling record database. She also needs to discuss the impacts of moving to a relational database in the future as this need is more fully defined. G Hall will meet with her next week when she is at TCO.
- Finished a memo to N Elkins, *Recommendation that the TCO to take the lead with IDS.*
- Met with Elaine Ezera (EGG) and Jim Beckett (EGG) to discuss TFM database support. E Ezera confirmed their need for continued CAG support for the transitioned TFMDB for support and maintenance for the next two months. I explained that the additional support after transition was not included in our budget and that we need funding to cover this task. We talked about possible additional work to support user front end interfaces that would replace the TFMDB with a cleaner, easier to maintain connection to GENESIS. This front end would allow data entry and data access at the FOC and the M&O directly into GENESIS and eliminate the maintenance of a separate database st the TFMDB. EGG is interested, however, with limited funding this year and the enormous REECo and M&O overruns it seems unlikely this work will get funded in FY94. E Ezera asked me to prepare scope and funding proposals for the work we discussed and have G Hall present it to her next week if possible.
- Returned to CAG offices in Carlton, OR

Test Data Coordination
See daily notes above.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9420

CAG: 919407401
LANL Subcontract: 9–X52-Z9658–1

Fri, Mar 25, 1994

To: Jim Hall
From: Gillian Hall
Subject: Trip Report 9420
Las Vegas, NV, Wed, Mar 23 - Fri, Mar 25, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Wed, Apr 2 - Fri, Apr 4, 1994
Tasks — TFM Database Transition to EG&G

Trip Summary

Wed, Mar 23, 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.

Thur, Mar 24, 1994

- Installed TFMDB and Paradox 4.0 at FOC. Met with Craig Matthews at the FOC and discussed plans for data transfer testing to begin in two weeks. Trained C Matthews on his TFMDB supervisory duties (creating new users, managing passwords, etc.). Reviewed FOC data entry responsibilities with C Matthews.
- Met with J Beckett and discussed FOC installation, TFMDB update, and data transfer issues. J Beckett advised me to inform C Matthews not to use TFMDB for data entry tasks or to train other users until the FOC has installed its own licensed copy of Paradox. J Beckett advised me of a security bug he had found in the software. I scheduled repair and re-installation of software for Friday. J Beckett requested two new user levels to be utilized by the M&O in entering control data for TFMs, TFM A/URs, JPs and TPPs.

Fri, Mar 25, 1994

- Installed repaired version of software at EG&G office. Met with D Boak regarding FileMaker database task for activity tracking. Met with Todd Radermacher. (EG&G) regarding database structure for software and equipment tracking system for EG&G.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9419

CAG: 919408401
LANL Subcontract: 9–X52-Z9658–1

Fri, Mar 25, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9419
Las Vegas, NV, Tue, Mar 22 - Thu, Mar 24, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Mon, Apr 4 - Thu, Apr 7, 1994
Tasks — Data Management, IDS

Trip Summary

Tue, Mar 22, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV
- Talked to Deirdre Boak about her latest proposal for an expanded functionality for the test planning support database. She is preparing an example database.
- Met with Alice Thompson to discuss her needs for supporting the TCO databases she manages. Our discussion identified the following issues:

1. She is concerned about database security with new plans to access information over an office network and student assistants.
2. I advised her to never allow others to modify her working files. She must make copies of these files, changes should be made to the copies on a different machine and tested to her satisfaction. In the best of worlds, any changes should be documented with a short description and the programmer's name in a maintenance file. The modified copies can then be installed on her computer after her current files have been saved on a backup. This will allow changes to be made in an orderly manner with a real backup in case of trouble.
3. She has no meaningful backup facility at this time (floppy disks only). I recommended she have a dedicated tape drive on her PC to allow her to do secure, daily backups.
4. She needs a duplicate record filter to allow her to identify and delete them.
5. She maintains multiple databases for different functions. It would be very useful to be able to be able to search multiple databases for records that went directly into a new report or file.
6. She will prepare a more complete list of her requirements.

Wed, Mar 23, 1994

- Attended the quarterly Technical Database planning and review meeting. The main agenda item was a discussion of the new M&O authored Technical Data Management Plan and supporting

procedure. Participant discussion of problems with the plan was so intense that A Simmons asked S Bodnar to revise the plan and distribute the revision for informal comments. The revised procedure was not available in time for the meeting and presumably will be distributed with the plan. A newly revised ATDT database with improved organization is now available for Project use. C Newbury is taking over from A Simmons (on a gradual transition over 1-2 months) as DOE Technical Data Manager.

- Met with N Elkins to discuss A Thompson's TCO database issues described above. He asked me to keep in touch with her to watch for possible problems as the new students gear up.

Thu, Mar 24, 1994

- Attended the scheduled (830am-200pm) M&O vendor meeting to follow up the Feb 3 YMP visit to USBM offices in Denver featuring USBM and Conspec to discuss the USBM developed and Conspec manufactured and supported mine data acquisition system. An interesting development was Conspec's discussion of their mine safety and mining equipment monitoring capabilities. Conspec and USBM provided brief presentations, answered questions, and provided clarifications to various issues raised in private comments, telephone calls, and written comments provided to them after the earlier presentation by USBM. Essentials of the presentations and subsequent discussions include the following:
  1. Kanaan Hanna speaking for USBM made a strong case for their participation in Conspec system specification preparation, system design, and follow-on support.
  2. USBM made a similar case for their providing engineering support directly to YMP by modifying their existing YMP services contract to support item 1 above and on-going USBM software development and supplements to Conspec software utilities. These include data presentation, graphing, and AI aided virtual reality (VR) data presentations. LLNL is currently interested in the initial USBM VR display techniques demonstrated at the Feb 3 USBM meeting.
  3. USBM estimated the resources for their data acquisition support activities for FY94-95 as 2 FTEs @ $300K/FY total cost.
  4. Each instrument is connected to an 8 or 16 channel accesser. Each accesser is connected to a data highway connecting the accesser to the system control computer.
  5. The Conspec proprietary network can be configured to support ≈2150 channels on each of 7 separate data highways resulting in a minimum full scan time for all 2150 channels of ≈2.3sec. Since all seven data highways are interrogated in a quasi parallel manner, the total scan time for 15,000 channels remains ≈2.3sec.
  6. Each accesser or smart accesser continuously scans connected instruments.the system control computer periodically (per user entered scanning schedule) polls each accesser for information stored in its data buffer. The control computer only has the ability to poll the accesser data buffers, not individual channels. Smart accessers can be set up to scan connected instruments at different rates.
  7. Smart accessers can be configured for special instrument monitoring rates and very general linear or non-linear data conversion algorithms.
  8. RTDs, strain gages, voltage, 4-20mA, and sonic transducers are currently supported. Thermocouple (TC) curve fitting algorithms are included, however, Conspec does not now market a TC cold-plate termination panel. A cold junction reference temperature can be included in the TC conversion algorithm from a TC termination panel from a third party supplier.

9. Vibrating Wire (VW) input front ends are not currently available. Conspec is currently negotiating with Geokon to use the Geokon VW interface design as the basis for a new VW input card to be used at WIPP. This input capability is expected to be available in FY94.
10. Up to sixteen instruments can be connected to each accesser for 12-bit conversion accuracy. The current design for 16-bit accuracy only allows one instrument per accesser. This limitation is being addressed in a new design that will allow up to sixteen instruments to connect to each accesser for 16-bit conversions.
11. During informal discussions Conspec indicated that they are planning an upgrade in the next 12 months that will increase system monitoring capabilities and add new features. Conspec has a good history of such upgrades. This will be the third major upgrade in four years of producing this equipment. Their software and hardware have already advanced beyond the original USBM design.

- Returned to CAG offices in Carlton, OR

Test Data Coordination
See daily notes above.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9418

CAG: 919407401
LANL Subcontract: 9–X52-Z9658–1

Tue, Mar 15, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9418
Las Vegas, NV, Mon, Mar 14 - Tue, Mar 15, 1994

Next Scheduled Trip
Gillian Hall
Las Vegas, NV — Wed, Mar 23 - Fri, Mar 25, 1994
Tasks — TFM Database Transition to EG&G

Trip Summary

Mon, Mar 14, 1994

- Trip to LANL offices in Las Vegas, NV.

Tue, Mar 15, 1994

- Completed IDS Application Software Evaluation Criteria form for B Roshe and delivered it to him. He stated he will review the document and get back to me regarding any changes.
- Discussed TFMDB installation at the FOC with C Matthews. The FOC still has not received the new version (4.5) of Paradox. I will be going out to the FOC on Thur, Mar 24 and as an interim loan will bring a CAG licensed copy of the software in case Paradox has not been installed at the time of my visit to the site. C Matthews agreed to meet me at the gate or to have a colleague meet me at the gate as an escort.
- Discussed FOC installation, TFMDB update, and data transfer issues with J Beckett. I will deliver TFM data and the FOC installed version of the TFMDB to EG&G Fri, Mar 25.
- Returned to CAG offices in Tempe, AZ

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9417

CAG: 919407701
LANL Subcontract: 9–X52-Z9658–1

Fri, Mar 18, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9417
Las Vegas, NV, Mon, Mar 14 - Thu, Mar 17, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Tue, Mar 22 - Thu, Mar 24, 1994
Tasks — Data Management, IDS

Trip Summary
Mon, Mar 14, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV
- Met with J Beckett for a status update on his progress in motivating Claudia Newbury to discuss with N Elkins the allocation of additional funding to the TCO for CAG database tasks. He will meet with C Newbury on Wed, Mar 16 and will emphasize the urgency of this issue.
- Met with F Homuth to discuss progress on data coordination tasks. Work has started on the FileMaker database for Test Planning and Study Plan status. Responses to the M&O requests for additional IDS information are at a very low priority. Clarification of Jeff Cerny's (M&O) tables of data acquisition requirements for each test vs Project document reference need to be resolved for developing a current single source of data acquisition requirements (FRD?).
- Met with F Homuth and Joe Grant (SNL) to discuss J Grant's request that the TCO data coordinator represent SNL at the upcoming M&O value engineering study (VES) planed for next week to evaluate facility ventilation. He will drop by a SNL memo outlining their ventilation system needs.

Tue, Mar 15, 1994

- Met with F Homuth for further discussion of the SNL request that the TCO represent them at the up coming M&O ventilation VES. Several issues resulted from our discussion:
  1. The VES should not be used for discovery of participant test requirements.
  2. F Homuth recently met with SNL and developed intermediate data related requirements for construction Phase 2B including SNL tests. These could be transmitted to the M&O ventilation engineers as SNL test requirements for ventilation measurements. It is not necessary or appropriate for this information to be presented to the VES (see issue 1.0 above).
  3. It is not clear that there is any benefit to the TCO to attend this VES.

- F Homuth reported that N Elkins has directed him participate in the M&O ventilation VES to ensure that the TCO is aware of M&O designer plans and other players (i.e., safety, mining, testing, and others) issues that may be important for TCO planning.

Wed, Mar 16, 1994

- I contacted Steve Bodnar and got the draft revision of document YAP-SIII.2Q - *Technical Data Management System Data Submission Process.* This document is one of two currently in draft revision that will be discussed at the TDB Working Group Meeting next Wed, Mar 23. The other document, YMP 93-09 - Technical Data Management Plan, has not yet reached draft. How we will discuss it at the meeting is unknown.
- Sam Rindskopf has not sent the memo (ghosted for him by J Hall) that he agreed to send to N Elkins, identifying the TCO as the author and having editorial responsibility for ESF DR Appendix B. I was able to contact him and he confirmed that there is a problem and he could not send the agreed to memo. JC De La Garza (DOE), the 1.2.1.2 WBS Manager for these document revision tasks, has, according the S Rindskopf, refused to allow the M&O to delegate this responsibility.
- Joe Grant met with F Homuth and provided us copies of his personal ventilation test write-up. He used several sources for information to compile this composit description of the test. Based on this write-up, further discussions with J Grant, and other SNL discussions about ventilation tests we came up with strategies for representing SNL in the upcoming VES (including J Hall editorial additions):

  1. SNL has requested that the ventilation system design include physical access to critical ventilation points (known to SNL and maybe the TCO) for installation of instrumentation as needed.
  2. SNL has no plans to install ventilation monitoring instruments at this time (the test has not been designed).
  3. There seem to be several participants with identified needs fort ventilation monitoring in the ESF. SNL will evaluate the completed M&O ventilation design including all other participant requirements and available data to determine if additional instrumentation is required to support their ventilation test.
  4. If data from other participant's monitoring programs is available and meets SNL criteria it may be used to support their ventilation test. SNL criteria for data acceptability include the following items:
     a. Data collection must be a controlled activity.
     b. Data management and distribution must be a QA controlled activity.
     c. Adequate system component calibration history must be available to verify the data.
     d. The data must contain data in engineering units, time and date stamp. I addition, instrument location, instrument type, instrument serial number or other unique identifier must be available as supporting data.
     e. Interpretive detail including ventilation system status, monitoring system status, calibration references, and data source references must be available for evaluation of the instrument data.

5. If the M&O Integrated Data & Control System (IDCS) data monitoring meets the above criteria and is judged to be the appropriate approach (i.e., based on schedules, budget, and availability), SNL will consider using the IDCS to monitor instruments SNL identifies in the future to support their ventilation monitoring test.
6. Common data, including ventilation data, has been identified as useful by Participants. Common Data items have not been completely defined at this time. No Common Data PI has been appointed. Participants are expected to review available Common Data and utilize any portions that meet their acceptance criteria and needs. If existing Common Data does not fulfill their needs, participants will expand their test instrumentation to include measurements to produce the required data. PIs will install their instruments (or contract for their installation) and request monitoring via the IDCS.

Thu, Mar 17, 1994

- Contacted Kaanan Hanna (USBM) to discuss the upcoming M&O sponsored meeting to host a presentation by Conspec of their commercially manufactured and supported USBM mine data acquisition systems next Thu, Mar 24.
- Had a discussion with F Homuth about expanding the current plans for a File Maker database supporting test planning project document tie-ins to include more information. D Boak is working on a model to demo her concept for what is needed.
- Returned to CAG offices in Carlton, OR

Contract

Contract negotiations for the FY94 CAG contract were completed last week.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9416

CAG: 919407001
LANL Subcontract: 9–X52-Z9658–1

Fri, Mar 11, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Trip Report 9416
Las Vegas, NV, Thur, Mar 10 - Fri, Mar 11, 1994

Next Scheduled Trip
Gillian Hall

Las Vegas, NV	Mon, Mar 14 - Tue, Mar 15, 1994
Tasks	IDS Process Model
	IDS Application Software Evaluation Criteria
	TFM Database Transition to EG&G

Trip Summary

Thur, Mar 10 1994

- Trip from CAG offices in Tempe, AZ to LANL offices in Las Vegas, NV.
- TFMDB documentation revisions and reproduction reflecting latest user level modifications.
- Completed review of demo software submitted for review by M&O IDS design team.
- Completed preliminary IDS process model.

Fri, Mar 11, 1994

- Met with B Rosche in the M&O offices regarding progress on the preliminary process model for the IDS. Discussed progress on a software features list for evaluation of vendor software packages aimed at satisfying some aspect of IDS processes. Delivered preliminary process model and promised delivery of software evaluation criteria for Tuesday (Mar 15).
- Met with Jim Beckett regarding progress on implementing the TFMDB on the Ingres platform at EG&G. The database has still not been implemented in Ingres, but action is anticipated soon. Resolved issue of performing updates from the EG&G Ingres database (TDB) to the FOC Paradox TFM DB.Completion of preparations delayed until Tue, Mar 15 due to EGG conflicts.
- Left LANL offices.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9415

CAG: 919405901
LANL Subcontract: 9–X52-Z9658–1

Mon, Feb 28, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report 9415
Las Vegas, NV, Tue, Feb 22 - Fri, Feb 25, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Mon, Mar 14 - Thu, Mar 17, 1994
Tasks — Data Management, IDS

Trip Summary

Tue, Feb 22, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV

Wed, Feb 23, 1994

- Discussed current status of IDS activities.

- Reinstalled and cleaned up system 7.1 on F Homuth's Mac IIcx to recover from a crash resulting from installing MacLink Plus v7.5 two weeks ago.

- Discussed the contents and use of the proposed test planning database with F Homuth and D Boak. Work continues with the intention that everything on the current charts (created by R Oliver) will be included plus data related items identified for inclusion. As a first cut the database will be able to produce a report that is an identical document to the existing charts and add data items as needed. Later revisions will include additional items as they are identified by test planning team. The information currently being developed by C Breeds relating tests to lithologic information is not yet available. When these charts and the related information is identified, selected items from this effort may be included in the database.

- H Kalia has organized a trip to USBM offices in Denver to review the USBM designed and supported mine data acquisition system currently being manufactured by Conspec. This is a follow-up to a USBM presentation to YMP, Las Vegas about a year ago. DOE, TCO, and M&O personnel are traveling to Denver to take part in this review. This system is being procured by Westinghouse for installation at WIPP and has been proposed by H Kalia as an off-the-shelf replacement for some or all of the currently proposed IDS or participant supplied data acquisition equipment. My request to join the F Homuth and R Oliver to travel to Denver for the one day system review was turned down by R Oliver who was in charge of planning the TCO trip. His refusal was based on his belief that there would be no added value to the

office gained from my attendance and the system probably won't be used anyway.

- Met with the M&O IDS designers (B Carlisle, R Rosche, J Cerny, and F Lane) to discuss the current status of IDS. They are making plans for the combined Integrated Control and Data System (ICDS). Petrie has accepted the need for the old Integrated Control System (ICS) that will include many IDS elements (ESF network, surface facility, database computer, and others). Adding IDS will only include DAS units, network taps, engineering, and procurement. The M&O engineering team's understanding is that they will supply DAS units for PI tests as part of ICDS funding specifically identified for testing. Their planned procurements for FY95 include DAS units for SNL Construction Monitoring. The current M&O strategy has not changed from earlier IDS strategies that include the M&O specifying and procuring DAS units for participant data acquisition. I suggested they consider EGG as their system integrator.

Thu, Feb 24, 1994

- Met with R Rosche and F Lane to discuss the current state of IDS design and procurements. They confirmed that their direction is to proceed with the traditional IDS concept that the M&O supplies DAS units to SNL in FY95 with gradual integration into an integrated network and test database computer at the surface. There has apparently been no direction from DOE defining a new IDS definition or change of responsibilities.

- SNL informs me that they received TCO direction last week to supply their own data acquisition for ALL of their tests. The most recent IDS commitment was that SNL would supply dataloggers to support their initial tests in the starter tunnel and the first few thousand feet of drift following the TBM. IDS would take over CM monitoring as DAS units were delivered in FY95.

- Had a brief discussion with K Lobo (SAIC) to determine what he understands to be the current IDS concept being promoted by the M&O. He confirmed that the M&O concept, championed by J Leak, is to have each participant build their own data acquisition system and connect their equipment to the ICDS network as desired to store data in the ICDS database for use by DOE. Of the many flaws in this concept, the most discouraging is that J Leak is busy developing IDS concepts that anybody takes seriously. This again points up the serious problem that IDS (and other ESF design programs?) suffers in the M&O shop from lack of strong, competent technical management.

- Met with F Homuth, R Rosche, F Lane, and B Carlisle for a regularly scheduled IDS design status meeting. F Homuth described the current status of the USGS borehole drilling in Alcove #1. B Carlisle continued to explore IDS alternates that would include participants supplying their own IDS and somehow connecting to an IDS network and archiving computer thus meeting M&O perceived high-level project IDS requirements. Overall the meeting was rather stormy and divided along organizational lines. Major issues were not resolved. IDS discussion continued to center around how to implement IDS in the near future with the following issues presented:

LANL

1. If IDS survives the current DOE scrutiny, there must be a re-evaluation of M&O concepts of IDS implementation to define a simpler system initially that meets users needs and is consistent with project needs and DOEs funding targets.
2. IDS design should be focused on short term objectives; FY94-5-6.
3. The design should include data acquisition stations (DASs) to support the SNL CM test in FY95 an a simple network connecting the DAS units to a PC on a desk at the surface storing data.
4. The DAS units should be a general purpose design that include enough flexibility to be used in any CM location and for other tests as they are identified.
5. The basic DAS design and subsequent procurements should include unconfigured extra capacity and spares that enable individual DAS units to be reconfigured to meet data acquisition needs as they develop in the field.
6. Complex requirements in the IDS FRD and other LANL, EGG, and RSN documents should be deferred until it is realistic to implement them (maybe never).
7. IDS design should focus on developing a simple minimal system that DOES NOT meet the entire set of requirements. This system should meet some useful (for the next 2 FYs) subset of the final requirements and include the basic elements needed to support short range testing. Care should be exercised to design the DAS units flexibly to include options for expansion and general usefulness that could enable the design to carry through to more extensive testing activities. It should be understood that by the time the large tests are developed a new DAS design may be appropriate for technical and economic reasons.
8. The current M&O strategy for contacting for an integrator to actually do the nuts and bolts design, build, and install the IDS is a bad idea for this job and we belive it will fail to produce an IDS on time (or ever!). This is evidenced by the following observations:

    a. the M&O is adamant about developing a formal specification for the entire IDS system, including every bell and whistle, to be used as part of the procurement documentation to buy their systems integrator services vendor - a complete specification is not possible now and probably will only exist as an as-built baseline
    b. the integrator procurement must be of a certain minimum size (unspecified but implied to be $Ms) to attract the appropriate vendor of the size and expertize of a Hewlett-Packard - this is contrary with our commitment to size and budget IDS to reflect the currently identified testing program
    c. changes to the contracted scope of the M&O envisioned integrator will always be accompanied by contract change negotiations and usually additional cost - this is contrary to simplicity of task development, up front cost control, and timely performance
    d. if the M&O does everything that they have planned to attract their "acceptable" integrator the best candidate may not bid and the worst may win the job.
    e. these folks are still trying to instrument an oil refinery! - we need DOE assistance to change their concept of how this job will be done

M&O

1. The M&O needs a current test activity description identifying each test and the extent of IDS support identified. In current revisions of defining documents there are conflicting descriptions of IDS requirements that need to be clarified in one document.
   JNH Note: The M&O IDS manager (B Carlisle) and his team are high-level requirements

oriented and seem unable to understand and clearly state the need for IDS based on their engineering expertise. They are confused by conflicting requirements in different Project approved documents, however, these conflicting requirements are not even evaluated as changes in requirements with time as the testing program evolves. The M&O IDS design team has no applicable experience to this kind of a scientific project and they keep trying to fit the IDS into an fixed industrial process job. Below a certain size all data acquisition and control systems are identified as "gypsies" or anonymous home brew black boxes of no credibility. This parochial view is based on their lack of direct field experience on similar projects. I am not sure that a successful IDS would ever grow past their "gypsy" stage.

2. The M&O feels that they are proposing a minimal incremental cost IDS for FY95-96 with the remainder (the bulk of the cost) implemented in FY97 to support the Engineered Barrier Test. They do not think that their proposed FY95-96 budget will be significantly different than that already proposed by J Leak through FY93 and early FY94.
   JNH Note: These budgets and their pitiful justifications have failed twice; only incompetent management would move on, without change, to try again for a third time.
3. The B Carlisle stated that he had intelligence that Petrie and the "test community" had agreed to delay testing until the TBM daylights at the S Portal. This relieves the pressure on the M&O for actually producing IDS for a while.
   JNH Note: This item left F Homuth and I speechless. This intelligence no doubt came from J Leak, the M&O IDS point man with DOE (see 2 above).
4. B Carlisle asked for more information about what use the original IDS design (EGG) would have for real time data at the surface facility. I pointed out that real time data was not part of the original design in the sense of continuous real time displays but occasional monitoring of test performance. No participants have indicated a need for continuous real time displays of underground test data at the surface.
5. F Lane requested again that the TCO generate a memo dispositioning test requirements that appear in the various high level project documents. This would identify a single set of target IDS specifications.
   JNH Note: Identifying a single set of IDS specifications in project high level documents is a poor way of characterizing IDS since all of the referenced documents are several years old and probably do not reflect current test needs.
6. F Lane requested an up-to-date and complete description of the SNL Construction Monitoring IDS and other near term tests.
   JNH Note: This document is in preparation.

Fri, Feb 25, 1994

- Met with J Beckett to discuss the current status of transitioning the TFM Database (TFMDB). Coordinating the EGG's TFM work with EGG other tasks and FOC personnel schedules has been difficult. EGG underestimated the difficulty of implementing their part of the TFM database in the TDB and it has taken longer for them to complete. They have asked for support from CAG to include more extensive modifications in the TFMDB than originally identified. We discussed again EGG's realization that overall maintenance for supporting remote interactions with the TDB would be greatly simplified by replacing the TFMDB with an Ingres (the TDB database running on EGG's Sun workstation) front end at the remote site. Beckett has proposed that G Hall work on this task after the TFM transition is complete. We discussed the need for additional budget to support these activities and J Beckett will continue to pursue this issue with Claudia Newbury (DOE) to get added funding for the TCO for this task.

- Returned to CAG offices in Carlton, OR

Contract

Contract negotiations were complete last week except for travel issues raised by EES-13. Travel issues were resolved (number of contract trips are OK) with D Holmes Fri, Feb 18 by F Homuth. Verifying paperwork was sent to MAT Fri or Tue (?). More action pending Lab interoffice snail mail delivery of EES-13's vital *Number of Trips OK* memo to MAT.

Test Data Coordination

See daily notes above.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.0.0.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9414

CAG: 919403901
LANL Subcontract: 9–X52-Z9658–1

Fri, Feb 8, 1994

To: Fred Homuth
From: Gillian Hall
Subject: Las Vegas Trip 9414, Mon, Feb. 6 - Fri, Feb. 10, 1994

Next Scheduled Trip

Las Vegas, NV	LANL/TCO	Thu., Mar. 10, 1994
Tasks:	LANL TCO TFMDB	

Trip Summary

Mon, Feb. 6, 1994
- Trip from CAG offices in Tempe, AZ to Las Vegas, NV.

Tue, Feb. 7, 1994
- Trained C Matthews on TFMDB operation for FOC user level.
- Loaded and tested new version of TFMDB on C Breeds' laptop computer.
- Performed TFMDB documentation modification and updates.

Wed, Feb. 8, 1994
- Met with Chris Breeds regarding status of TFMDB and status of transition tasks.
- Performed reporting modifications requested by C Breeds

Thu, Feb. 9, 1994
- Met with J Beckett regarding status of TFMDB transition. Discussed procedures for updating FOC PC based TFMDB from TDB. Discussed structural issues with regard to passing data between databases. Discussed possibility of designing a front end system in Paradox for Windows to take the place of an insular database at the FOC site.
- Trip to CAG offices in Tempe, AZ from Las Vegas, NV.

TFMDB
- J Beckett to set up TFMDB in Ingres environment
- G Hall will install and train users at FOC site on next trip
- G Hall will perform TFMDB modifications requested by EG&G and FOC
- G Hall will follow up with R. Rosche as needed to continue work on IDS DFDs

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Trip Report 9413

CAG: 919405301
LANL Subcontract: 9–X52-Z9658–1

Fri, Feb 22, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report TR9413
Las Vegas, NV, Mon, Feb 7 - Thu, Feb 10, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV — Wed, Feb 23 - Fri, Feb 25, 1994
Tasks — Data Management, IDS

The body text for this Trip Report was damaged and could not be recovered

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9412

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 919403101
LANL Subcontract: 9–X52-Z9658–1

Mon, Jan 31, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9412 - Gillian Hall
Las Vegas, NV, Wed, Jan 26 - Fri, Jan 28, 1994

Next Scheduled Trip

Las Vegas, NV Mon, Feb. 7 - Thu, Feb 10, 1994
Tasks: FOC personnel training in LV on TFMDB operation, TFMDB issues

Trip Summary

Wed, Jan. 26, 1994

- Trip from CAG offices in Tempe, AZ to Las Vegas, NV.

Thu, Jan. 27, 1994

- Met with ππ Breeds regarding TFMDB update, his data entry tasks, and transitioning logistics
- Integrated C Breeds new data into new version of database
- Integrated EG&G Activity Keys, Descriptions, and Names into restructured database tables
- Tested updated system for data integrity violations and other potential problems. All OK.

Fri, Jan. 28, 1994

- Meetings with Jim Beckett in EG&G regarding TFMDB transition procedures, additional changes to TFM Management System application, and data passing procedures
- Completed updating, printing, and distributing new system documentation
- Completed user and time stamping procedures requested by J. Beckett
- Updated C Breeds copy of TFMDB with new procedures
- Returned to CAG offices in Tempe, AZ.

TFMDB

- J Beckett to provide EG&G database transition protocol for G Hall to review.
- J Beckett to provide copy of data dictionary for related databases transitioned from other participants.
- G Hall will continue performing data entry tasks upon next trip to LANL office.
- G Hall will begin preliminary TFMDB modifications in preparation for transition process.

Cy: N Elkins, LANL, EES-13/LV, MS 527

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9411

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 919402801
LANL Subcontract: 9-X52-Z9658-1

Fri, Jan 28, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report TR9411
Los Alamos, NM, Wed, Jan 25 - Thu, Jan 27, 1994

Next Scheduled Trip
Jim Hall
Las Vegas, NV Mon, Feb 7 - Thu, Feb 10, 1994
Tasks Data Management, IDS

Trip Summary
Tue, Jan 25, 1994
- Trip from CAG offices in Carlton, OR to Los Alamos, NM.

Wed, Jan 26, 1994
- Met with environmental restoration personnel from LANL and Golder Associates to discuss their progress on instrumentation and database management techniques. R Crowley (LANL) heads the waste disposal site instrumentation group. They are currently planning to use SEAMIST instrument deployment balloons demonstrated at an Annual YMP Meeting several years ago. They are just getting started in this area. Other tasks supporting the effort (QA, management, organization, and turf battles) are much the same as ever. One central LANL database (FIMAD) has been identified to support the entire environmental effort. What and how much FIMAD will do is still being sorted out similarly to the same processes that are driving GENESIS development at YMP.
- Met with D Knox (FIN 4) on his latest request for additional supporting information for the current CAG cost proposal. He has put off dealing with our proposal until just days before J Jefferis requested his report. His last minute request to CAG for additional info comes while I am traveling and will be responded to when I return to my office and may contribute to a few days delay in negotiations.
- Continued to edit the IDS addition to the ESF DR rev 1.

Thu, Jan 27, 1994
- Attended the Annual Yucca Mountain Project All Hands Meeting
- Attended QA training for QP17.6 - Records Management
- Returned to CAG offices in Carlton, OR

Contract

See daily notes above.

Test Data Coordination

Continuing to add to the existing outline and solicit comment feedback.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9410

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 919403101
LANL Subcontract: 9–X52-Z9658–1

Mon, Jan 31, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report TR9410
Las Vegas, NV, Wed, Jan 19 - Fri, Jan 21, 1994

Next Scheduled Trip

Jim Hall
Los Alamos, NM Tue, Jan 25 - Thu, Jan 27, 1993
Tasks YMP All Hands Meeting, QA Training, contract issues

Trip Summary

Wed, Jan 19, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Thu, Jan 20, 1994

- Discussed current IDS status with F Homuth. The new VE study is still in limbo without a firm date or list of participants. Petrie seems to be backing off of his earlier position of killing the IDS to giving a 2nd try at a real??? VE effort with less emotionally involved participants. In any case there is a rumor that he (and other DOE managers) will accept a 2nd VE finding that favors an IDS approach (2nd times a charm?). Can addictive IDS bashers be rehabed? Stay tuned.
- Met with F Homuth, D Boak, and R Oliver to discuss the draft Data Coordination Plan (DCP). The present draft plan seems to be off the beam for everybody. New scribbling starts immediately to include comments form this meeting and other individual comments. I am not sure that a "plan" will turn out to be the target of this exercise. Maybe a description of to overall data coordination activity of specific descriptions of individual tasks. The best forum is continued meetings of interested parties to critique the straw-man "plan(s)" to zero in on a consensus. The next Data Coordination meeting is planned for early Feb. Details covered in this meeting were as follows:

  1. The plan must be product oriented. The product has not been fully defined yet.
  2. Products including data sets must be identified in TPs and JPs and the SCP flow-down path be identified. (I am not sure this ID is anything more than an SCP reference number).
  3. "Special problems" may need individual attention. i.e., when USGS finds a "high" water content rock they must send a sample to LANL. *CAG - Is this a data coordination problem?*

4. The TCO may need to add test features to TPs in addition to PI test features included in study plans to make sure the test meets the SCP. *CAG - Is this within the TCO's authority?* Reporting on these items will be included by the Test Coordinator in the monthly Test Coordinator Report.
5. The Data Coordinator will not be involved in specification of data acquisition or instrument details.
6. Develop test controls needed during construction to minimize test interaction or impact problems.
7. Certain core issues in the TP process need to handled making the Data Coordination Plan an administrative activity specifically needed to support test planning.
8. Track core test analysis activities to:
   a. identify which PI does what to identify duplicate data set development efforts and/or duplicate analysis results. *CAG - Is this within the TCO's authority?*
   b. request general information from PIs and others on testing and the information in the Study Plans, SCP, and other resources. *CAG - What is the value in this effort when the PI is ultimately responsible for all data collected from planned tests. Is their some "unplanned data" that the TCO is tracking?*
   c. identify and flag data that will ultimately be part of data sets submitted by PIs to the TDB and/or the RIB for tracking the data and alerting DOE of the existence of raw data contributing to DOE databases. *CAG - Is this practical?*
9. An example to Test Planning Package details that instructions to the Sample Management Facility come from the TCO generated TPP and JP. The details include instructions that are to be followed by PIs and TCO personnel.
10. The above withstanding, all test identification, test activity, data acquisition, test plans, identification of essential elements of the testing program, etc are all included or under the auspices in the PI authored Study Plans and are the sole responsibility of the PIs. *CAG - are there conflicts with other issues presented at this meeting with this caveat?*

- Met with A Mitchell to discuss the draft DCP and other feedback. He used the example of Inez geochemistry test as an event that will probably include data coordinator help in identifying appropriate instrumentation, data acquisition requirements, and data related issues. All of these activities would somehow be performed under the Test Planning umbrella and would need to be addressed in a Data Coordination Plan or elsewhere to identify the flow of responsibility in the TCO for performing these tasks. The Study Plan will indicate the test ideas but may not contain sufficient detail to characterize the data acquisition requirements or data management issues. Subsequent documents (authored by the PI or in collaboration with the TCO may be required.
- Continued to add information to the draft DCP.
- After the current IDS VE saga is complete and if IDS survives in some form, it may be appropriate for the TCO to sponsor an IDS meeting that is a PI forum for discussing what IDS can do for each PI, resolving Participant buy-in to IDS. To make IDS work the TCO must be able to air our misgivings about the M&O IDS design-procurement strategy and find out which PIs will be using IDS.

Fri, Jan 21, 1994

- Met with Ken Ashlock M&O Systems Engineering) to discuss the status of ESF DR updates and the schedule for submitting revisions for Rev 1 (the next issue). Due to many delays principally caused by other M&O groups the schedule for Rev 1 has slipped far behind projections. Our contribution of a patch to Appendix B is due within the next 2 weeks. I am working on revising the initial M&O submission.
- Discussion with N Elkins resulted in his taking the lead for work on further Appendix B updates to be included in ESF DR Rev 2. K Askcroft still expects Rev 2 to be completed before the end of FY94.
- I visited with A Simmons (DOE) to get her reaction to recent IDS events with no result.
- Returned to CAG offices in Carlton, OR

Contract

No action

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road, Carlton, OR 97111
(503) 852-7214 (Voice & FAX)

TRIP REPORT 9409

CAG: 919401401
LANL Subcontract: 9-X52-Z9658-1

Fri, Jan 14, 1994

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9409
Las Vegas, NV, Sun, Jan.9 - Wed, Jan 12, 1994

Next Scheduled Trip

Jim Hall
Las Vegas, NV — Wed, Jan 19 - Thu, Jan 20, 1993
Tasks — Data Management

Trip Summary

Sun, Jan 9, 1994

- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Mon, Jan 10, 1994

- Attended the opening meeting of the IDS Value Engineering Study (Agenda in Attachment 1). A brief description of the meeting is included below.

Tue, Jan 11, 1994

- Attended the daily meeting of the IDS Value Engineering Study

Wed, Jan 12, 1994

- Attended the daily meeting of the IDS Value Engineering Study
- Returned to CAG offices in Carlton, OR

Contract

The original FY94 cost proposal (based on FY92 contract negotiations) was found to be deficient by D Knox. A new cost proposal was submiited to J Jefferis on Tue, Jan 4, 1994. Key changes were reduced hours identified for J Hall and simplified overhead costs. Since the new cost proposal contains many items already examined and accepted by D Knox, we hope that his review will be completed soon and contract negotiations completed this month.

Test Data Coordination

The next step is review for direction and completeness. Due to the IDS VE meeting there was no time for a data management/coordination meeting this week.

Meeting Notes

IDS Value Engineering Study Meeting
Agenda in Attachment 1

Monday, Jan 10, 1994
Morning Session, Room 9234

Three speakers gave opening remarks:

- *H Kalia:* A thorough historic recap including IDS rationale, scope, and budget up to the time EG&G took over the task. A overview of EG&G design activities and a brief mention of RSN, and M&O efforts. He ended with his personal priorities the VE Study (Attachment 2).
- *J Leak:* A rambling rehash of recent M&O budget presentations without focus (Attachment 3).
- *T Petrie:* Provided direction to the group to develop at least two alternatives proposals that include considerations of project budget, schedule, and planning uncertainties. He described past problems in being able to plan for spending in the near future (i.e., the next FY). He went on to suggest the group focus on his strong reccommendation that IDS plans must be in step with this reality of uncertain budgets and not based on the need to spend at rates inonsistent with other project elements.

The VE specialist and VE team leader, xx, described the VE process and introduced the FAST diagram as his high level description of testing and data acquisition for the ESF (Attachment 4). This diagram was unfamiliar to most present. There were a few comments resulting in some modifications, however, it is not clear that the diagram is a good representation of the process described. There was some general discussion of IDS issues and it was observedthat there should be an M&O representative for the proposed excavation monitoring and tunnel safety system.

Afternoon Session, Large DOE Conference Room

The afternoon was spent developing descriptions of alternative data acquisition senarios, IDS and non-IDS, and essential performance criteria. These two sets of elements were ranked by importance in a matrix following a VE method developed by the AIA. The resulting scores will be computed and used as a basis for further refinements of selection of methods. Identification of elements and their importance was the result of impromptu discussion and quick proposal of ideas. Voting on the elements and their importance was by majority. Although the outcome is always quite tidy it is not clear whether important elements have been left out or sound decisions made. The leader made several remarks about the short time available for this review.

Tue, Jan 11, 1994
Morning and Afternoon Session, Room 450

The VE leader presented the results of the groups evaluation of of the idendified criteria from Tue. He went on to describe the next task, a ranking matrix of methods vs criteria. The criteria evaluation had produced weighting factors from a high of 28 to a low of 2 points. All criteria with 2 points or less were eleiminated from the evaluation. Several alternate methods were eliminated as inappropriate for

long term (10-15 years) data acquisition (Alternatives 2 & 4) or not actually IDS alternatnatives (Alternatives 9 & 11). The discussion to rank the remaining matrix items lasted the whole day. Principle areas of discussion centered on primary IDS functions, USGS & LLNL views on participant needs and the value of IDS in their testing work, and identification and characterization of minimum IDS configurations.

Current IDS strategies were defended vigourously (and humorlessly) by the M&O (Frank Lane & Bob Rosche) with many references to heavy words from high level DOE tomes including threatining references IDS requirements (DOE is ordering us to provide an IDS or it wouldn't be in the SCP, right?). With equal vigor, J Blink minimized the importance and relevance of IDS. The leader asked us all (again!) to stay focused on studying alternatives, even ones against percieved rules, since, at our reccommendation, the rules might be changed. These petty in-fights seemed to balance out with ridiculous high and low nulifying votes cast by each side on different issues. All of the others in the group continued to do their best to be even handed in the evaluation while presenting their points of view. H Kalia and C Newberry reminded everyone that the cited requirements in the SCP and other high-level documents were potentially perishible by footnote in current DOE planning documents.

The meeting adjourned at 5pm as the ranking scores for the evaluated alternatives were being compiled.

Wed, Jan 12, 1994
Morning and Afternoon Session, DOE Large Conference Room

The results of the Alternative ranking were announced and the top four were identified for further discussion and development of advantages and disadvantages for each Alternative. The leader brought up the issue that no non-IDS Alternative had made it into the top 4 and asked for discussion. J Blink made a case for including a low placing Alternate that included the participants developing their own IDS. The M&O reacted with their requirements driven liteny and crys of foulplay since this would sabatoge the VE process. This resulted in a round of discussion that polarized the IDS team into blind supporters of the M&O way and those seeking (blindly?) alternative approaches that could be useful in terms of uncertain testing schedules and budgets near term. Again the heated exchanges were moderated by the group, consideration was limited to the top 4, and discussion began.

I made a rather ineffectual observation that underlying the usefulness of the proposed Alternatives including IDS is a basic problem of the M&O strategy of hiring an integrator to actually design and produce the IDS. In the M&O's view, this integrator must be a very solid, large company that is technically capable and financally stable enough to be around for the next 10-15 years that we need them. I supported this strategy through the first half of FY93. After working with the M&O for this time I now belive this strategy will probably not work for YMP. There is no way the M&O can write the procurement documents to garantee that we will get a competent integrator-vendor. Even if the vendor looks good at award, they may fail to produce an adeqaute IDS and only be accessible for remedial action through contractual action. We may get a light-weight (and inadequate) vendor because the contract is too small and weakly defined for future work to attract the Hewlett-Packards and DECs the M&O is hoping will bid. The M&O has NO alternate to this strategy. They have no internal expertise for the nuts and bolts IDS technical work. There seemed to be no way to

incorporate this issue into the VE structure since it is a global management issue. It will be important to actively persue this issue after the VE reccommendations are acted upon by DOE if the IDS moves ahead.

I left the meeting early (11am) to return to Carlton, OR due to a family illness.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9408

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 9193335401
LANL Subcontract: 9–X52-Z9658–1

Mon, Dec 20, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9408
Las Vegas, NV, Tue, Dec 14 - Fri, Dec 17, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Mon, Jan 10 - Thu, Jan 13, 1993
Tasks IDS, Trip to site for a meeting with SNL at the FOC

Trip Summary
Tue, Dec 14, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Wed, Dec 15, 1993
- Delivered draft letter to F Homuth requesting PI feedback concerning IDS data format and related issues as requested by the M&O IDS designers.
- Attended the TCO scheduled IDS/M&O Interface Meeting (see meeting summary below).
- Discussed current office action items with F Homuth. The following items are top priority to accomplish soon:
  1. Take a look at the current M&O ESF drawings to check on the IDS item included.
  2. Find or make a complete list of current planned ESF tests.
  3. Develop test information to supplement the above list including the correct name, responsible organization, IDS use (yes-no), planned date, and location in the ESF.
  4. A rough estimate of IDS channels, data rates, and data generated for the major tests would be helpful even though accurate information on many tests is not available. Earlier EGG and RSN estimates based on high channel counts and unrealistically high data rates do not provide useful input to the design process. These high-side biased figures result in over designed IDS database capacity, network bandwidth, DAS complexity, and host archiving computer power all leading to significantly higher IDS costs than originally expected.
- Met with F Homuth and N Elkins to discuss possible strategies for procurement of IDS components to support LLNL LBT temperature measurements. The M&O has stopped work on this task. F Homuth has told B Carlisle (M&O IDS) that he is moving ahead with getting this issue resolved. Homuth explained that the M&O does not believe they can make this procurement without T Petrie's concurrence and ,up to now at least, he has apposed it. Elkins suggested that he will have a discussion with B Simeca and get a decision about whether we should pursue this procurement.
- Discussed with F Homuth the importance of independently exploring the possibility of using

EGG (or another resource available through REECo) as the IDS Operations and Maintenance (O&M) contractor at the ESF. EGG could play a key role in providing expertise missing in the current M&O planning as follows:

1. The M&O has no developed IDS O&M strategy at this time.
2. Because the M&O has no strategy, their budget and manpower projections are only based on guesses without actual goals. Estimates from other credible players (REECo, etc.) their guesstimates are easily criticized and they have no defensible rationale for the numbers or their estimating strategies (i.e., their pitiful defense of the FY94-95 IDS budgets earlier this year).
3. The M&O concept of IDS implementation does not include an in-house capability for operation and handling the inevitable software and hardware tasks needed to bring the system up at installation and keep it operating. I continue to worry that the IDS group is still instrumenting an aluminum rolling mill.
4. The M&O implementation strategy is based on identifying a large integrating contractor on their first procurement. This integrator will provide all the expertize and glue to stick the low bid bag of parts together into an IDS. As IDS grows, the M&O will write purchase orders to this integrator and the integrator will supply additional IDS components and integration services from for the life of the task. This approach is likely to be inconsistent with the TCO approach of slowly building the IDS from isolated components to a full system over several years. It is unclear how the M&O is going to attract a suitable integrator and award a multi-year $10M-$20M contract based on first and second year procurements of $1M-$2M.
5. There are alternatives available to the M&O and the project on how to develop IDS. Maintaining the M&O as designers is a good idea. Their problems in getting started EGG might be able to handle the early integration efforts (first 2-3 years) and possibly contribute to or take over the later integration effort. EGG involvement could cancel the need for the M&O to include the integrator in their procurements, simplifying the procurement specs and process and giving us a better chance of delivering an IDS in a timely manner. EGG could work under the direction of the M&O (or LANL if the M&O job fell apart).

Another possible alternate is an independent subcontract through the General Services Administration (GSA) for software (and hardware?) support services through their general support contracts for the district that includes Las Vegas. These GSA service contractors are deliberately contracted by GSA to be available without bidding or complicated procurement processes as a GSA "catalog item". Job assessment, design, and implementation are all available at a fixed hourly cost. Personnel can work at their facility or be temporarily or permanently assigned to YMP in Las Vegas or at the ESF.

Based on the need to develop long range plans for IDS that specifically target realistic strategies for design, integration, installation, and operation of IDS in the coming months these options should be investigated soon.

Thu, Dec 16, 1993

- Attended a meeting with G Hall (CAG) and R Rosche (M&O IDS) to discuss the draft IDS software specifications. The discussion resulted in the following items:
  1. The current host computer and DAS software descriptions and diagrams are probably not

adequate for the identified bid process. The network software description is OK.

2. A process model is needed to describe the whole system (including diagrams and terse text) for internal M&O use in preparing software specifications.
3. The final IDS may use 2 or more separate commercial software packages to accomplish all of the identified functions. The vendor-integrator will write any custom software needed to glue these separate applications together.
4. Candidate software packages will be identified by the M&O and evaluated during a design study scheduled to start in Jan 94 and completed in about 5 months.
5. The software specifications are scheduled for completion in Jul 94.
6. Reliability discussions confirmed an agreement that IDS reliability is targeted on preserving data. High availability for host computer CPU time and network availability to users are not critical. System design is expected to include local DAS storage as large as needed (100s of Mbs to Gbs) to allow each DAS to locally store data as long as the host or network is down (days or weeks). Manual copies of DAS data during extended network or Host outage is acceptable. Expensive redundancy is not needed.
7. The discussion resulted in the following action items:
   a. G Hall will move ahead to develop, in cooperation with R Rosche, an IDS host computer software process model. The model will be in the form of diagrams supplemented by terse text and a features list. This should be complete by mid Feb 94.
   b. R Rosche will supply G Hall with identified software package demos and brochures.
   c. If time is available after completing the process model, G Hall will:
      1. prepare a description of object oriented databases (OODB) vs relational types to help the M&O and TCO understand the pros and cons of an IDS OODB.
      2. evaluate the software for representative commercial CD-ROM authoring systems suitable for inclusion into IDS.
   d General discussion touched on several related issues:
      1. A distributed database is not needed to meet IDS data reliability needs.
      2. Dual redundant network electronics are not needed to meet IDS data reliability needs.
      3. Radio modems may be very useful in the ESF to connect isolated DAS units, DAS units to the host during a network failure, and short term test IDS. A slotted antenna is planned for the ESF and its bandwidth and extent needs to be checked. The usefulness of RF-IDS needs to be verified and IDS requirements (if any) need to be included in the ESF RF requirements.

- Met briefly with A Burningham to discuss the fact that the M&O has a loan (pirate) copy of Primavera form the TCO. They used this copy to prepare a network schedule for a DOE (T Petrie) IDS budget meeting. R Waters (IDS WBS Manager) has asked M&O IDS to keep this schedule current. Burningham instructed me to inform the M&O that they should stop using their copy of TCO Primavera immediately (to avoid problems with the TRW software police) and purchase their own copy. This message has been delivered and they have already started the process of acquiring a copy from their Fluor-Daniel, Irvine, CA office.
- Met with F Homuth and N Elkins to verify that earlier FY94 budget projections for CAG are still accurate. Elkins verified that the Oct 19, 1993 figures (CAG TR9407, pg 3) are current. Checking with K Kinter resulted in the following:

	Code	Starting Budget	Current Accounts
Jim Hall	B32H	$250K	$177.5K
Gillian Hall	B378	$50-60K	$25.0K
Chris Breeds	B341 - 1/3	$200K	$152.4K
	B374 - 1/3		
	B378 - 1/3		
Totals		$500K-$510K	$354.9K

I also asked Kinter to review CAG spending rates for Oct and Nov and report any problems. The indicated decrease in funding may cause problems in the needed level of support for IDS and the planned TFM database revisions. CAG needs verification of these numbers to do planning of effort for the remainder of FY94.

- Met with K Ashlock (M&O TRW) about the M&O's current effort to revise the ESFDR (rev 1) to include references to the IDS cut from the most recent revision (rev 0). His thinking on this revision has changed somewhat from our earlier plan.A simple, unchanging reference to IDS is planned with detailed description and requirements contained in Appendix B. The insert into the body text of the ESFDR has been revised and simplified as shown in the draft below:

3.2.1.6 TEST SUPPORT

The ESF test support shall include provisions for an IDS and underground test support facilities as a minimum. The test support facilities are defined as those facilities that accommodate the testing apparatus used for equipment assembly, checkout, and repair.
[SD&TRD 3.7.2.2.9.A]

A. Support shall be provided for the IDS and for individual tests. See ESFDR Appendix B for a summary of requirements.
[SD&TRD 3.7.2.2.9.A]

B. Facilities shall be provided, as defined in ESFDR Appendix B, to incorporate an IDS into the ESF.
[SD&TRD 3.7.2.2.9.A]

F. The ESF designers shall interface with IDS and repository designers on ESF site locations and layout and on permanent ESF structures, systems, and components. Section 3.2.1.Z.1 shall apply.
[SD&TRD 3.2.7.1.A.3, 3.7.B.1][10 CFR 60.15(c)(4), 60.133]

Interface control issues have been a concern to the M&O IDS designers and the TCO since involvement with the controls imposed by the interface control groups and Configuration Management could slow IDS design to a stop. IDS design should be excluded from interface controls. New text in the SD and TRD will include directives that correctly limit interface control to ESF configuration items:

G. **Interface control will be established between the following:**

1. **The facility designers and the IDS designers for electrical and mechanical cable and terminating requirements between the instruments and the IDS.**
[SD&TRD 3.7.2.2.9.A]

2. **The IDS designers and the facility designers for support requirements for the IDS facility.**
[SD&TRD 3.7.2.2.9.A]

K Ashlock noted that the schedule for completing ESFDR rev 1 has slipped a month or two. The TCO review of the ESFDR body text is due ASAP since that section of the document is final edit now. Comments on the M&O prepared IDS text that Ashlock wants to insert into the existing (unrevised) Appendix B is due in early Jan. The background for ESFDR rev 1 is that it is a patch job to ensure traceability for current ESF design efforts. Rev 0 had deleted all references to IDS from the body text and the planned IDS patch for rev 1 is to include a credible IDS reference in the ESFDR that would be expanded and brought up to date in rev 2 that is planned to be started in the spring and scheduled to be completed during FY94. It will be necessary to develop a TCO policy on ESFDR revisions and plan for revising Appendix B in Jan to be prepared to meet planned ESFDR rev 2 editorial schedules.

Fri, Dec 17, 1993

- Attended the TFM Transition Planning Meeting held in 820 room 1 9am-11am. This is not a complete meeting report; TFMDB issues only are listed. The result of the TFMDB discussion was as follows:
  1. The TFM transition will be complete by Tue, Feb 1, 1994. Until then all TFM data will continue to be directed to the TCO and acted on appropriately.
  2. C Breeds will coordinate data entry into the TFMDB to bring it up-to-date.
  3. The present TFMDB application requires changes before it is installed in the FOC as the field input processor for as built TFM data:
     a. input limited to specific as-built TFM reporting
     b. report printing maintained
     c. TFM controls and certain other fields are locked and cannot be changed by the user
     d. EGG will transfer TFM defining data and controls to the FOC by disk or modem
     e. FOC will transfer TFM as built data to EGG by disk or modem
     f. modem transfers will be supplemented by disk transfers to verify the data
  4. J Beckett (EGG) strongly recommended to C Newbury (DOE) that any possible changes to the TFMDB that would make it easier for FOC personnel to use it should be implemented before transition and the transition version should be used for 6-months before any upgrades or changes are made beyond bug fixes.
  5. G Hall will work with C Breeds to plan the required changes to the application.
  6. G Hall will work with J Beckett (EGG) to work out TFMDB/GENESIS interface issues.
  7. G Hall will revise the TFMDB, the TFMDB Users Manual, and train or assist in training user(s) in the FOC prior to transition.
  8. G Hall will provide bug fixes during the first phase of TFMDB operation (6 months).

9. G Hall will be available interact with EGG on TFMDB issues after transition, however, EGG expects to this effort be a minor or non-existent.
10. Revisions to the TFMDB will be negotiated with the TCO after 6-months.

- Returned to CAG offices in Carlton, OR

Contract

Discussion with J Jefferis concluded that he does not want to modify the current contract again to provide additional interim funding since he has been told by D Knox (FIN-4) that Knox's CAG rate audit report is just about done. Jefferis expects to receive the report next week (12/20/93) allowing us to complete negotiations before christmas. Hope springs eternal!

Test Data Coordination

IDS Data Management Plan outline and TCO Data Coordination Plan have been completed. The next step is review for direction and completeness.

Meeting Notes

Wed, Dec 16, 1993, 8:30am - 11:00am
IDS TCO/M&O Interface Meeting
Room 820-1

Attendees		
Jeff Cerny	M&O/IDS	4-5371
Jim Hall	LANL/CAG	4-7270/503 852-7214
Fred Homuth	LANL	4-5103
Frank Lane	M&O/IDS	4-1968
Bob Rosche	M&O/IDS	4-1970

The following issues were discussed:

1. Due to holidays and individual schedules and a planned Wed Jan 12 TCO trip to the FOC, the next TCO/M&O IDS Interface meeting has been scheduled for Thu, Jan 13, 1994.

2. :F Homuth reported that the TCO was moving ahead with finding ways to supply IDS to LLNL for LBT. Although M&O had earlier identified certain costs with LBT in budget workups by J leak, the TCO had independently priced suitable equipment. The preliminary estimates were from Keithley-$50K and IoTech-$25K. Both of these systems were originally identified for IDS by F Lane and are acceptable units. The TCO concept is no-frills support for LBT as was originally proposed earlier in the year; no installation, no software, no maintenance, no spares, no training. The TCO would like to resolve this issue this week if possible and wants to pursue a high-level DOE meeting with Petrie or Simeca led by N Elkins to get a yes-no answer to reallocating present M&O funds to make the ≈$25K procurement for LBT. The M&O agreed to support this approach pending agreement by B Carlisle (not present at the meeting). This discussion resulted in the following items:

- F Homuth will coordinate and push the meeting with N Elkins. He will keep the M&O informed of developments.
- F Lane will recheck to IoTech estimate to be sure it is complete, add any missing items, and compile a new cost estimate.

3. R Rosche reported that his preparation of the Primavera based IDS scheduling network for planned DOE budget meetings has expanded into an on-going effort. The current level of effort is 1-day for each time the schedule is updated plus several additional hours printing the final product. Recently R Waters (DOE) asked him to maintain updates on a weekly basis. He won't update the network this often, however, Primavera will be in regular use in his office. He is now using a pirate copy of the TCO Primavera we loaned him specifically to put together the presentation. Rosche is worried about this and will initiate purchasing a copy of the software or transferring an existing Fluor-Daniel license to the M&O IDS design group. He has agreed to remove the TCO copy of Primavera from his computer.

4. R Rosche reported that he had been contacted by K Ashlock reminding him that the M&O authored, TCO reviewed temporary patch to ESFDR rev 1 is due soon. We should finish our review and return comments to R Rosche who will pass them on tho K Ashlock. Both J Hall and Rosche will contact Ashlock to check up on his progress, the actual text generated so far, and what the actual schedules are.

5. F Lane will supply a disk or hard copy of DR level comments he prepared for internal M&O use earlier in the year in case they might be useful to us in preparing IDS text for ESFDR rev 2.

6. F Lane again requested instrument lists for planned tests to be used in developing their IDS hardware specifications. The discussion resulted in the following items:
   - TCO will locate or prepare a terse list of all planned tests including each tests proper name, IDS yes-no, schedule (install start or test start), location in the ESF (approximate for planning).
   - Some of the instrument list type information will be included in the supplements to the FRD requirements that are now being prepared by the TCO.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9407

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 9193334001
LANL Subcontract: 9-X52-Z9658-1

Mon, Dec 6, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9407
Las Vegas, NV, Mon, Nov 29 - Thu, Dec 2, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Wed, Dec 15 - Fri, Dec 17, 1993

Trip Summary
Mon, Nov 29, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Tue, Nov 30, 1993
- Met with F Homuth to discuss IDS strategy and problems with the current M&O IDS preoccupation with very high level DOE related interface control issues and related project definitions related to IDS. I am concerned that these efforts are impacting IDS design activities and may actually lead to involvement with M&O/DOE make-work groups that identify IDS as a target for more paperwork, reviews, controls, etc and actually damage our chances of ever producing a system.
- The weekly meeting with F Homuth, B Carlisle (M&O IDS), and R Waters (DOE) was cancelled by R Waters. B Carlisle provided TCO with a copy of the draft network fragment for review covering M&O IDS activities for FY94 (FY94 IDS Engineering Schedule) he had prepared for the meeting.
- Met with F Homuth and R Rosche (M&O IDS) to discuss Rosche's submittal to the M&O systems engineering group for inclusion into the ESF DR.
- Met with F Homuth and N Elkins to discuss IDS progress and concerns as follows:
  1. F Homuth and I relayed our disappointment with the M&O's roll-over-and-die attitude about supporting the LLNL LBT. Over a period of months we were able to demonstrate to LLNL that IDS was a useful partner in their LBT. J Blink recently sent us a letter asking for IDS to supply 340 channels of temperature measurement. This was self serving to a large extent since LLNL expects IDS to pay for the IDS equipment out of IDS funds. This is not out of line since IDS has always planned funding to include procurement of the total IDS system. The request also indicates that we have convinced LLNL that IDS is a good idea and that we are a viable supplier of the right kind of data acquisition gear. This is an important step for IDS and we thought the M&O saw it as a strategic element of

demonstrating that IDS was real, more than just a paper idea. When the IDS capital budget was zeroed, the M&O had put so much effort into justifying their own proposed (inflated to recoup prior cuts) engineering budget proposal (i.e., $100K to engineer the procurement of a $25K-$50K LBT IDS) that they have probably started to believe their own (read J Leak's) line. F Homuth has obtained preliminary quotes from two acceptable data acquisition equipment manufacturers for 340 channels of temperature measurement gear, one for $50K and the other for $25K. N Elkins advised us not to give up. He suggested that we pursue the idea of supplying this equipment through reallocation of funds from the TCO IDS and the M&O IDS (the sharing ratio based on their relative budgets?) or failing this to suggest that LLNL contribute a part (or all) as well. This issue should be thought out and presented by the TCO to T Petrie ASAP for resolution. At this Petrie presentation we should also remind him that LANL is working to transfer surplus equipment from SSC for long term SNL CM support. It may be worth mentioning that funds are also needed in FY94 to develop the SNL CM datalogger interface to IDS and these amy be available through SNL budgets.

2. F Homuth explained that we are making progress in tracking down possible surplus computer and data acquisition equipment from SSC. We are at a point that we need guidance to proceed. H Kalia has been in contact with Roy Cook (PB) and J Hall has been in contact with R Robinson (S&W, a PB SSC subcontractor) and found the same equipment. Since we have offered our support to the M&O by letter and have not had a reply, N Elkins recommended that we proceed, asking H Kalia to expand his contact in an attempt to identify a specific DOE surplus equipment contact at SSC and propose a trip to T Petrie to SSC to research this and other potentially useful gear in the near future.
3. F Homuth and I expressed our concern that M&O IDS design effort has been substantially impacted for the last month or two by using the engineers to prepare materials used (ineffectively so far) to support the feeble M&O efforts to get the IDS FY94 capital budget restored. We wonder why this high-level effort (not much actual engineering) is not being supported by B Carlisle, the IDS group leader, leaving the engineers to work on IDS. Further the M&O IDS group does not seem to be very excited about the task. Having their capital budget zeroed was like an off switch. Suddenly everything seems to take longer, no passion, and F Lane (IDS hardware engineer) is being used to investigate other ESF design hierarchy issues. No bright ideas about how we could support LLNL's LBT or SNL CM, just quiet resignation. We agreed not to attack (in the meeting) inflated M&O IDS engineering budget figures presented in DOE budget meetings to move their presentation process along. Even with TCO help in preparing hard schedule documents and clean up of their overhead slides, the presentations were poor and without impact. Their best feature was that Petrie did not chew us up (one of his good days). He did however, note that he was beginning to question the need for even the IDS engineering budgets. In spite of much M&O patting each other on the back, this was not progress. These budget presentations seem to be of highest M&O priority, yet they are unable to identify a real live-wire presenter who understands IDS needs and technical issues (J Leak, their presenter, is an M&O budget bully), can gain rapport with DOE personnel in the audience, or even develop a point to the presentation (T Petrie had to ask what the point of the last presentation was). These issues have lead to consideration of other possible IDS support scenarios (outlined elsewhere in this TR).

- Installed system 7.1 on F Homuth's Macintosh IIcx computer. As part of the installation I used a portable CAG hard drive to back up and restore the IIcx files. I am reminded that a backup device is needed for the Macs in the TCO. For general utility a portable 650Mb magneto-optical drive that can be easily moved and connected to each Mac for backup when required would be the best solution. This drive is superior to tape since the MO drive uses removable 650Mb cartridges and mounts to the desktop just like any other Mac drive. All folders and files are accessible in a normal manner. No new techniques or backup software need to be utilized. This is the most cost effective size and will accept several backup images from a particular computer. Cartridges can also be used for disk image storage for other purposes.I recommend the Microtech Genesis 650 MO drive (a field proven medium speed, hi performance unit); drive $2200 (includes SCSI cable and software) and 650Mb cartridges at $90/ea (initial order 10ea).

Wed, Dec 1, 1993

- Attended the TCO scheduled IDS Interface Meeting (see meeting summary below).
- Discussed with F Homuth CAG subcontract questions posed by D Knox (FIN-4) as part of his verification of CAG rates for FY94. The questions primarily dealt with costs included in CAG indirect overhead expenses related to on going internal CAG data acquisition investigation projects that are part of developing our corporate expertise in computer based data acquisition, data management. These expenses have been examined by buyers and D Knox in past years and have been identified as acceptable costs of doing business. This year CAG had assistance from Price-Waterhouse, a national accounting firm, in preparing the FY94 overhead projections submitted to D Knox to ensure that our submittal met the FAR guidelines and were correctly allocated to direct and indirect costs and allowed and disallowed items. As a very small business we don't seem to fit some arbitrary profile Knox is using. Inclusion of SubTerra has also caused our contract to be identified as larger than it actually works out to be for CAG and this inflated contract ceiling apparently targets us for more intense scrubbing from FIN. Sigh!
- Discussed QA issues and strategies impacting the IDS Data Management Plan and TCO Data Coordination plans that are in preparation with A Burningham. Due to the major revisions taking place in the LANL YMP QA program, we decided that the best approach will be to develop both plans as administrative documents, applying QA detail after the first of the year (when the new QA documents are issued) as necessary. A Burningham suggested that utilizing existing QA procedures for document control will cover acquiring and distributing IDS data. IDS data archiving will also be covered by existing procedures. A file drawer in a fire-proof filing cabinet will probably be sufficient for TCO IDS data archive storage for the next 3 years, maybe longer. There is no existing procedure or mechanism to give direction to the IDS operator (outside LANL) for making data sets and distributing the to participants and the IDS Data Manager. This procedure will have to be written after LANL's new YMP QA program is implemented. Not to worry, this procedure will not be needed until there is an IDS and an IDS "operator".
- Discussed possible changes in levels of funding for CAG (J Hall, C Breeds, and G Hall) with F Homuth for the remainder of FY94. It is important that CAG be kept informed of current funding levels (if they change) to allow CAG to plan our effort to meet LANL's and CAG's expectations and commitments. Our present funding targets are as follows as established in a meeting with F Homuth, N Elkins, J Hall, and C Breeds on Tue, Oct 19, 1993:

	Code	FY94 Budget
Jim Hall	B32H	$250K
Gillian Hall	B378	$50-60K
Chris Breeds	B341 - 1/3	$200K
	B374 - 1/3	
	B378 - 1/3	

Thu, Dec 2, 1993

- Met with F Homuth and Randy Edgett (Aztec Enterprises-sales rep) to discuss the cost of data acquisition equipment suitable for LBT. F Homuth received a Keithly quote of ≈$50K for 34 channels of RTD. During the meeting Edgett provided an IoTech quote for $25K for the same capability.
- Discussed R Rosche's ESF DR submittal with K Ashlock (M&O Systems Group). He confirmed that Rosche's submittal was not main body ESF DR format and that he had not (in opposition to our earlier agreement) instructed Rosche to produce a new write-up. Instead he rolled Rosche's text into Appendix B and will author a note for the main body of the ESF DR rev 1 (the current revision be worked on) pointing to Appendix B for IDS specifications. This not a satisfactory solution for Ashlock or myself and both of these IDS inserts should be replaced in ESF DR rev 2 (work starts in Feb or Mar 1994). Ashlock expects the TCO to produce both the main body IDS text and revisions to Appendix B for ESF DR rev 2. The M&O will supply text for the IDS BFD. The TCO needs to begin planning for this effort soon (Jan 1994).
- Met with F Homuth and H Kalia to discuss the next step in identifying and transferring SSC equipment to the TCO. H Kalia will talk to his SSC contact to again attempt to identify the SSC DOE equipment control person. He will also talk to Petrie about how to proceed from YMP to get the equipment transferred to the project.
- Continued discussions of M&O poor performance with F Homuth. M&O IDS lack of enthusiasm for the task is likely to intimidate the PIs we are building the system for. It is important that we develop alternate strategies for accomplishing IDS goals with little or no M&O participation. Possible IDS alternatives include the following:

  1. The present IDS contractor has not bought into the "start small and grow with the PIs" concept that the TCO has been promoting with them for the past year. DOE actions of zeroing IDS capital budgets do not help us convince the M&O to follow our suggested policies. More helpful would be for DOE approve budgets at our recommended levels to provide adequate PI test support without ballooning the job.
  2. PIs purchase their own DAS equipment, choosing items from TCO or M&O identified equipment lists. These DAS stations would be connected to an IDS surface archiving computer when the computer and facility LAN was available. Data formats and network communications standards would be semi-uniform by using standardized hardware.
  3. DAS calibrations, instrument calibrations, and other supporting information could be gathered by the IDS operator or the TCO as part of test package requirements.
  4. IDS data management would finally be impractical if there was no IDS archiving computer. This function would either revert to the PIs or an archiving computer and supporting DAS network would be installed.

5. The surface archiving computer and network could be developed later by another IDS contractor.

Other concepts are waiting to be thought of. Hold on to your seat (?), this may be the start of something reeeealy big!

- Packed up and returned to CAG offices in Carlton, OR

Contract
See discussion with F Homuth above

Test Data Coordination
IDS Data Management plan outline is in preparation. See notes on QA and procedural discussions with A Burningham above.

Meeting Notes
Wed, Dec 1, 1993, 8:30am - 9:30am
IDS TCO/M&O Interface Meeting
Room 820-1

Attendees		
Bruce Carlisle	M&O/IDS	4-7635
Jeff Cerny	M&O/IDS	4-5371
Jim Hall	LANL/CAG	4-7270/503 852-7214
Fred Homuth	LANL	4-5103
Frank Lane	M&O/IDS	4-1968
Bob Rosche	M&O/IDS	4-1970

The following issues were discussed:

1. B Carlisle informed us that future official communication from TCO to M&O IDS should come from Ned Elkins and be addressed to Paul Pimentel (M&O). This will provide the correct document traceability needed by the M&O QA system.

2. B Carlisle is preparing draft letters to be sent from Pimentel to Elkins requesting hardware definition for planned FY95 procurements. This material is now in preparation as an addendum to the LANL FRD and will be ready in Jan. Another letter will request a meeting TCO, M&O IDS, and all test participants to discuss the following items:
   - data distribution media
   - data formats and frame size
   - select the database type (relational, object oriented)
   - specific data expected to be stored in the IDS database
   - special data or software related requirements

3. B Carlisle requested a copy of the minutes from the A Simmons IDS meeting to help him understand the scope of IDS data management activities.

4. B Carlisle mentioned that there is an internal M&O problem involving IDS review and QA issues that currently defined at the most stringent levels. These controls and reviews may impact M&O IDS ability to deliver product. He asked us for suggestions and/or help to resolve these issues. He is now working through Bill Leonard (M&O QA), a medium level QAer, to get information. He has not identified the person(s) imposing these requirements on the M&O IDS program and doesn't seem to know how to proceed. This may be a very impactive problem for IDS.

B Carlisle became ill and the meeting adjourned.

Informal discussion after the meeting with F Lane confirmed that the M&O IDS is under attack from special interest M&O groups that that want to impose their special paperwork and scheduling agenda and processes on IDS activities.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9406

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 9193333001
LANL Subcontract: 9–X52-Z9658–1

Fri, Nov 26, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9406
Las Vegas, NV, Tue, Nov 16 - Fri, Nov 19, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Mon, Nov 29 - Thu, Dec 2, 1993

Trip Summary
Tue, Nov 16, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Wed, Nov 17, 1993
- Received draft copies of the M&O IDS procurement specifications.
- Attended the TCO scheduled IDS Interface Meeting (see meeting summary below).
- Briefly attended the COMDEX exhibition to register and get an exhibits guide.
- Participated in a discussion with F Homuth and N Elkins concerning the the lack of IDS capital funding to support IDS for large block (LBT).
  1. N Elkins observed that there may be a chance that LBT would fund an economical IDS out of their pocket. The TCO must act quickly to continue to represent IDS interests and sell them (precursor IDS to ESF testing IDS, needed experience) on this funding idea.
  2. If LBT fails to support FY94 IDS capital funding, we must formally inform LBT that IDS will not be able to participate in FY94. If LBT has FY 95 IDS capital equipment needs they should inform us soon to allow us to include their request in the FY95 IDS capital budget.

Thu, Nov 18, 1993
- Returned to COMDEX to visit identified vendors.

Of particular interest was that the JVC CD ROM authoring system can produce CDs in ISO 9600 format with the result that data stored on the disk would be readable cross-platform on DOS/Windows, Macintosh, and Unix machines equipped with CD drives. This is another important plus for using CD ROMs for IDS data archiving and makes CD ROMs an attractive media for data distribution to participants. JVC advertises a 10 year data lifetime, however this seems to be experience related and 20 year or longer lifetime is probably more likely. Although the disks are stable and readable over a wide range of temperature and humidity, they must be

protected from physical abuse since damage to the optical properties of the read side of the disk would result in lost data.

- Contacted Red Robinson the lead field engineer for Shannon & Wilson (geotechnical engineers) working at the experimental shaft and tunnel construction monitoring at the SSC under Parsons Brinkerhof. Two vibrating-wire data acquisition systems were purchased for SSC construction monitoring in the Experimental Shaft and in the tunnels. One unit (Geokon, 180 channels) was installed at the Experimental Shaft and will be in operation indefinitely. The other unit (Rock Test, 60-80 channels) has not been installed and may be available. He had no knowledge of computers used in the physics and administrative groups. He recommended that we contact Charlie Daugherty, head of the PB/MK geotechnical group in Dallas, TX to track down equipment (800 854-1902, 214 708-6548). He also reported that there has been another inquiry from PB YMP (no name) about this same equipment earlier this week.

Fri, Nov 19, 1993

- Met with F Homuth and B Gardella (REECo) to discuss IDS procurement details with the following result:
  1. All issues of document traceability, YMP approvals, test and acceptance requirements and procedures, and other similar issues must be resolved by the submitter before the purchase request is sent to REECo. Once REECo receives the procurement request and specs they proceed on the basis of their internal process related to capital or non-capital and $ amount. REECo action on a procurement request is not based on REECo reviews of participant preparedness. If a procurement request is made and funding is available, REECo proceeds.
  2. All non sole-sourced procurements take a minimum of 90 days (including CBD ads) to sign the contract with the vendor. If the procurement includes special details involving vendor submittals and requester approvals the time can easily extend to 120 days or more.
  3. Sole sourced procurements may take longer and involve industrial hygiene, safety, and other reviews.
  4. Capital items are identified as meeting all three of the following criteria:
     - costs >$5K
     - has a service life >5 years
     - is an identified subsytem or unit that can be separated from the infrastructure
  5. Procurements $ amounts effect procurement processes as follows:

     <$100K the REECo YMP procurement group manages the entire procurement without outside approvals or reviews

     <$500K the REECo YMP procurement group manages the entire procurement. REECo notifies NVOO. NVOO may intervene (not likely).

     <$1M the REECo YMP procurement group manages the procurement. NVOO approval required.

     >$1M the REECo YMP procurement group manages the procurement with additional internal REECo procurement committee and other reviews. NVOO approval required.

- Returned to CAG offices in Carlton, OR

Contract

The latest information requested by D Knox (detailed FY94 estimated expenditures) has been completed and sent to him. D Knox is on vacation this week and rate negotiations with him will be resumed next week. The rate of progress on the contract will probably require additional interim funding ($20K) be allocated to cover the Nov CAG billing.

Test Data Coordination

No action

Meeting Notes

Wed, Nov 16, 1993, 8:30pm - 12:00noon
IDS TCO/M&O Interface Meeting
Room 820-1

Attendees

Bruce Carlisle	M&O/IDS	4-7635
Jim Hall	LANL/CAG	4-7270/503 852-7214
Fred Homuth	LANL	4-5103
Frank Lane	M&O/IDS	4-1968
Bob Rosche	M&O/IDS	4-1970

The following issues were discussed:

1. B Carlisle has been researching M&O information transfer procedures and their adequacy to support IDS traceability. He has tentatively identified conflicts in project and M&O procedures controlling information transfer. The only issue he is concerned with is how to transfer data across the TCO-M&O interface in a controlled and traceable manner. He has recently initiated contact with Richard Jiu (M&O systems engineering) and asked him to read the M&O documentation procedure 3.12 and AP5.19Q to decide which applies to IDS design input from the TCO and advise him to proceed. LANL responded that participant QAPs and supporting procedures have sufficient controls for transfer of documents and that AP5.19Q applies to higher level site characterization related activities directly involving YMP. B Carlisle also related that ICWG (J Jiu secretary) is currently expanding their interests beyond site characterization to underground safety and RAM. This results in their being involved with certain M&O ESF design processes and J Jiu has advised B Carlisle that IDS should be part of this process. Others involved in B Carlisle's discussions are:

Dan Royer	YMP Systems Branch Chief
Bruce Hutchinson	M&O
Richard Jiu	M&O, ICWG secretary
Marty Lightner	M&O

   Actions on this issue are:
   a. TCO provides B Carlisle a copy of the TCO document transfer procedure
   b. M&O B Carlisle reads the M&O and TCO document transfer procedures to look for conflicts

c. TCO will think about how to resolve the IDS-ICWG involvement issue
d. M&O F Lane feels he can work on getting site characterization separated from AP5.19Q.

2. F Lane (M&O IDS) has been assigned special tasks by L Engwall to evaluate and comment on high level systems issues for the current ESF design effort. F Lane is also making a recommendations to the M&O concerning simplifying involvement of AP5.19Q with IDS and other test related activities.

3. F Lane asked that we include disposition of old directives and specs as we issue new ones. Including "this supersedes..." in the newest documents will do.

4. B Carlisle requested the TCO to supply sensor counts, specifications, and approximate locations for the entire testing program. TCO responded that this can be done based on earlier test requirements in Rev 1 of the FRD and current planned test locations. Most of this information will "best engineering estimates".

5. F Homuth reiterated that the TCO expects IDS to provide general purpose data acquisition stations (DASs) that will be specifically configured in procurement specs or in the field for identified testing activities.There was consensus that pre-configured units from a vendor are preferred and an understanding that field re-configuration will be required form time-to-time and needs to be included in O&M planning, supporting procurements, and design strategies.

6. We revisited the M&O IDS concerns about documenting high-level requirements hierarchy documents. The following items were discussed:

   - The M&O IDS, TCO, and as far as we know Sam Rindskopf's (M&O System Eng) group agree that the proposed IDS ESF DR patch to the ESF DR rev 1 will temporarily satisfy high-level IDS requirements traceability back to the ESF DR.
   - M&O IDS is authoring the patch for the ESF DR ver 1 revision.
   - TCO is authoring all subsequent changes to the ESF DR (ver 2 and later revisions).
   - TCO is authoring all changes to the ESF DR Appendix B starting with ver 2.
   - TCO reviews and approves the M&O rev 1 patch before incorporation into the ESF DR.
   - ESF DR rev 2 will support the ESF design 90% review.

7. TCO needs to initiate a formal definition of IDS equipment needed to support M&O proposed FY95 procurements. Items identified during the meeting were:

• SNL CM DAS units	10 ea	Now in current M&O FY95 IDS budget plan
• USGS RBT equipment	2 ea	ditto
• General Purpose DAS	1 ea	Not in current M&O FY95 IDS budget plan
• Mobile DAS	1 ea	Not in current M&O FY95 IDS budget plan
• Spares	??	Not in current M&O FY95 IDS budget plan

8. M&O needs QA controlled FRD revisions to complete their IDS procurement specifications. These documents are in preparation. Reviewed and controlled FRD revisions will be first followed by a

revised FRD incorporating the changes.

9. M&O is still not clear about the required configuration for SNL CM DAS vibrating wire input channels.

10. The M&O under J Leak is preparing another IDS presentation scheduled for early Dec, 1993 (probably during the week of Dec 6). Issues to be presented will include:

    - What are we (M&O and TCO) doing with the FY94 engineering budget
    - A detailed breakdown of proposed hardware for FY94-FY95
    - Network IDS schedules as part of the M&O integrated ESF schedule or simulated as a spur. These networks must include ESF and testing milestones for reference.
    - A detailed FY95 work and spending schedule.

11. There was some discussion about what criteria to base the development of the proposed IDS network on with no consensus. TCO will review a draft network before the presentation.

12. M&O needs a simple list of currently identified IDS supported tests in the ESF. The list should include the current official name of the test, general, high-level requirements, approximate test installation start date (IDS needed), test start date, duration of test, approximate location of test. TCO agreed to prepare a preliminary list including as much of the requested detail as available. This list would be updated periodically to reflect current information.

13. The next meeting is scheduled for Wed, Dec 1, 1993 in TCO Conference Room 820-1.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9405

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 919331601
LANL Subcontract: 9–X52-Z9658–1

Fri,Nov 12, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9405
Las Vegas, NV, Tue, Nov 9 - Wed, Nov 10, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Tue, Nov 16 - Fri, Nov 19, 1993

Trip Summary
Tue, Nov 9, 1993

- Trip from CAG offices in Carlton, OR to Las Vegas, NV.
- Attended the M&O scheduled IDS Presentation meeting.
- Checked in with B Carlisle (M&O/IDS) on the status of the IDS requirements patch being prepared for the ESF DR Rev 1. The preliminary draft has been prepared by R Roshe and submitted to K Ashcroft for documentation group's review. B Carlisle expects to meet with the documentation group later this week to discuss the draft and get new guidance about proceeding. A review draft should be available for the TCO next week. For the TCO review to be effective we must have copies of the M&O/IDS draft procurement specifications available at least by the time we get the patch draft (sooner would be better). At an earlier meeting Sam Rindskopf had suggested that a copy the ESF DR IDS patch text could be simply renamed IDS BFD and serve as a BFD place holder and BFD patch for ESF DR Rev 1 and be updated in Rev 2 later this year. B Carlisle is reluctant to do this since he is convinced that it is too simple and his reading of the BFD rules means the M&O has to produce a more complicated temporary BFD. Sigh... We still have a way to go with these folks.
- Met briefly with F Homuth and N Elkins for a debriefing from the IDS meeting. N Elkins felt that although the presentation was weak, we probably got a good response from Petrie and should continue to pursue educating DOE about IDS using this platform. He had three observations:
  1. Vigorously protect TCO engineering funding.
  2. The TCO can participate in future shared IDS presentation representing testing and IDS data management only.
  3. Offer special TCO knowledge for identifying surplus equipment to DOE and the M&O.

Wed, Nov 10, 1993

- Returned to CAG offices in Carlton, OR

Contract
No action

Test Data Coordination
No action

Meeting Notes
Tue, Nov 9, 1993, 2:00pm - 3:00pm
IDS Presentation
Room P250

Attendees

Jim Agnew	M&O/WCFS (Site Characterization)
Bruce Carlisle	M&O/IDS
Ned Elkins	LANL
Larry Engwall	M&O
Jim Hall	LANL/CAG
Fred Homuth	LANL
Hemi Kalia	LANL
Jim Leak	M&O
Keith Lobo	SAIC/DOE Support
Jeff McCleary	M&O/Site Characterization
Jack Nesbitt	M&O/PE
Ted Petrie	DOE
Keith Roberts	M&O
Bob Waters	DOE

J Leak presented a brief overview of IDS target IDS activities for FY94-95 and proposed funding for FY94, 95, and 96. Three sepearte components of IDS were identified; IDS testing support in the ESF and the LLNL Large Block Test (LBT) at Fran Ridge, construction activity data collection and archiving for Control & Monitoring Support, and mine safety and fire protection system data archive. High level descriptions of components planned for IDS were provided and schedules based on LANL TCO test schedules briefly discussed. Proposed IDS budgets for FY94, 95, and 96 were presented with details rolled-up into high-level line items. The proposal included restoring the FY94 IDS capial funding, increasing M&O IDS engineering funding, and including LBT in IDS WBS 1.2.6 activities and funding. These items resulted in a total increase in IDS funding of $510K. Discussion focused on identification of the exact amount of proposed increase in funding, lack of detail to support rolled-up items, and the lack of project funding sources outside of re-allocation of existing budgets as a source of IDS funds. There was a brief discussion of the relevance of current IDS engineering funding that does not support capital procurements in FY94, however, this discussion was not pursued.

T Petrie was asked if the 50% review of IDS could be bypassed since design had progressed to near the 90% level. This is possible and will require a formal request from the M&O to DOE with supporting detail. This request should be made soon.

T Petrie was not satisfied with the level of detail presented to justify the proposed increase in funding and suggested the following items:

1. Additional detail is needed to support all rolled-up FY94 items including capital equipment, installation, and engineering. This detail needs to be sufficient to demonstrate support for critical FY items related to test plans, test schedules, and test data acquisition IDS plans and available PI data acquisition contingencies in the absence of IDS.
2. IDS support for tests (particulaly the SNL CM test for FY94-95) must include refernces to hierarchical requirements in the SCP and other YMPO documents relating to the project mission.
3. The LBT IDS microwave telephone link is not relevant to the ESF and should not show on ESF drawings. LLNL can provide their own microwave telephone communications at Fran Ridge, however, no ESF resources should be involved in this effort. T Petrie's opinion is that IDS data could be transferred by disk to IDS for the duration of the LBT with little or no risk or impact.
4. LBT IDS hardware, software, and engineering should not be funded from ESF WBS. It is not physically in the ESF and has its own WBS hierarchy and independent funding.
5. Alternate sources for FY94 IDS capital, engineering, and installation funds by reallocation of PI funding should be discussed with participant organizations.
6. The M&O proposed construction Control and Monitoring System needs to be sold to the constructor (REECo and PB/PK). If REECo does not support this system, even after funding has been allocated, it will not move forward.
7. Alternate sources of surplused equipment should be considered to satisfy items currently included in the IDS capital budget. Two currently identified sources are NTS through DNA and SSC.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9404

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 919331201
LANL Subcontract: 9–X52-Z9658–1

Mon,Nov 8, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9404
Las Vegas, NV, Tue, Nov 2 - Fri, Nov 5, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Tue, Nov 9 - Wed, Nov 10, 1993

Trip Summary
Tue, Nov 2, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Wed, Nov 3, 1993
- Met with F Homuth to discuss IDS budget problems for FY94.
- Attended the M&O Systems Engineering Group (M&O SEG) 2nd IDS Requirements Traceability Meeting at 8am in P250. Attending were:
  Ken Ashlock (M&O SEG)
  Sam Rindskopf (M&O SEG)
  Fred Homuth
  Bruce Carlisle (M&O IDS)
  Jim Hall

  The following issues were part of the discussion:
  1. The M&O SEG plans 2 revisions to the ESF DR in FY94:
     Rev1 is intended to patch the DR to support M&O ESF design activities and is now in progress. Final drafts for revisions to be included in Rev1 are due in about 2 weeks and all revisions will be incorporated into the DR ready for document review by 12/15.
     Rev2 is a more comprehensive revision that will provide permanent additions to the DR, replace patches, and incorporate new information. M&O SEG work on Rev 2 is scheduled to start in early Mar 1994 with revision drafts due not later than Apr 7, 1994.
  2. All functional references to IDS test support were removed from the current DR version (Rev0). This creates an IDS requirements traceability problem since there is no DR reference to provide IDS to support testing. To resolve the related M&O FY94 IDS procurement traceability problem, the M&O IDS group will draft high-level text patch to be

incorporated into ESF DR Rev1 including specific IDS requirements for FY94 procurements.

a. This patch will be written in the next 2-3 weeks.
b. The TCO will assist in preparing this patch as requested by the M&O and will review and approve the final draft before and after it is incorporated into the DR.
c. The M&O (B Carlisle) will take lead responsibility for this task, meeting with the M&O SEG to determine general content, scope, and to develop the IDS traceability matrix needed to demonstrate the appropriate connections to high level IDS definitions in the ESF DR. R Rosche (M&O IDS) will be responsible for writing the patch and preparing the responsibility matrix.
d. A copy of the patch will be retitled IDS BFD to satisfy the document hierarchy requirement for a BFD and as a place-holder for later IDS BFD development by the M&O IDS designers for ESF DR Rev2.

NOTE: The TCO must monitor the development of the requirements matrix to be sure all interested parties are satisfied to minimize the possibility of a requirements snafu late in the process.

3. S Rindskopf confirmed his groups request that the TCO take responsibility for generating ESF DR Appendix B text for Rev2. No changes in Appendix B are needed for Rev1. Plans to move Appendix B out of the DR into a separate test requirements document have been abandoned due to the high cost of revising references in higher level documents. Structural revisions in Appendix B could improve the organization of material and possibly make it more useful, however this may not be practical either. Planning discussions between the TCO and M&O System Engineering do define the revision scope, content, and organization need to proceed revisions to Appendix B. These discussions can take place at any time, the sooner the better.
4. The M&O SEG will provide the TCO with disk copies of the ESF DR and Appendix B to help our development of revisions. They would appreciate the TCO providing them with a disk copy of the FRD and M&O IDS providing a disk copy of their DRD.
5. Action Items
   a. B Carlisle & R Rosche meet with M&O SEG this week to kick-off SEG DR IDS patch activity
   b. B Carlisle provides draft IDS FY94 procurement schedule to S Rindskopf
   c. B Carlisle provides draft IDS FY94 procurement specifications to S Rindskopf
   d. M&O SEG provides ESF DR w/Appendix B on disk to the TCO and M&O IDS
   e. TCO supplies FRD on disk to M&O SEG
   f. M&O IDS supplies DRD on disk to M&O SEG
   g. TCO meets w/M&O SEG for ESF DR Rev2 IDS revision kick-off meeting Feb 15, 1994 or earlier to define the task.

- Received a fax from F Thamir (USGS) including details of data acquisition equipment he would like IDS to procure for him in FY94 with funds transferred from USGS to REECo (see Attachment #1). This procurement would be part of planned IDS procurements of participant specified equipment. IDS would assume responsibility for procurement, performance verification testing, maintenance, calibration, and replacement as necessary.

- Met with J Leak to discuss the up coming IDS DOE capital budget presentation on Tue, Nov 9. Major topics of discussion were as follows:
  1. The dry run for LANL will be Thu, Nov 4 from 2-4pm in the USGS Conference Room
  2. The dry run for Bob Waters will be Tue, Nov 9 at 8am in his office
  3. The IDS capital budget presentation for DOE will be Tue, Nov 9 at 2pm in P250
  4. The three separate ESF data acquisition systems (IDS, SSAS, construction support) may be separate physical systems, however all data from these activities will be stored in the IDS archiving computer. Archived data will be indexed by activity and separate data distributions will be made to each participant. This sounds like an OK justification. More discussion during the dry run will clarify this issue.
  5. J Leak's defense of the more capable archiving computer in FY94 is that it will be used to accumulate data for all three data acquisition activities. Even if IDS usage is small, the other systems will be generating data and need the IDS archive early in FY95.
  6. The M&O integrated planning network is 2-3 weeks from completion of the initial issue and will not be available in time for the up coming budget meeting. J Leak will use the scheduling info the TCO has provided to include IDS in this schedule. The TCO must track this process to review and approve the IDS items (and possibly other testing items) on a routine basis. There may be a periodic ESF network planning meeting the TCO should attend.
  7. Feedback from developing the initial network and subsequent network changes and updates must be incorporated into the TCO ESF/IDS schedules and these schedules distributed to participants. To be sure the TCO has accurate and current scheduling information on a timely basis some sort of formal interface needs to be established between the TCO and the M&O planners.

- There will be an M&O meeting with Aztec Marketing (Albuquerque) on Wed, Nov 10 at 930am to present new Keithley data acquisition equipment for general use in IDS DAS units and discuss the USGS thermocouple psychrometer measuring equipment. Planning to attend are F Homuth, B Carlisle (M&O), F Lane (M&O), R Rosche (M&O), Randy Edgett (Aztec), and Keithley engineers.
- Discussed with F Homuth the need for a TCO IDS memo requesting SNL and LLNL to identify a single IDS Point of Contact (POC) individual to provide the participant interface for all participant IDS test issues to the TCO. Falah Thamir is the current USGS IDS POC.

Thu, Nov 4, 1993

- Met with F Homuth and F Lane to discuss F Lane's concern that tests are inadequately identified in the ESF DR to justify IDS planning for out-year procurements.
- Prepared draft revised slides for J Leak's IDS Capital Budget presentation next week.

Fri, Nov 5, 1993

- Reviewed with F Homuth a discussion between G Hall and R Rosche (M&O IDS) about the software data flow diagrams (DFDs) being used by the M&O to describe the IDS. Her conclusion is that the present diagrams do not conform to the Yourdon DFD model (as represented by the M&O), contain conceptual errors, and are incomplete. No further action on this item is planned at this time, however these diagrams or other detailed descriptions will have to be developed before major software is purchased.

- Discussed IDS O&M issues with F Homuth including the possibility of a REECo-EGG team for field work and IDS maintenance. This could provide long term high-level technical support lacking in the M&O IDS team and continuity through ESF designer changes.
- Met with F Homuth to make preliminary plans for TCO Field Data Coordination and IDS Data Management. We developed a strategy, deliverables, and a schedule.
- Returned to Carlton, OR.

Contract

Darren Knox has informed CAG that FY94 financial estimates will be required to evaluate CAG FY94 proposed rates. CAG FY94 estimates are being prepared now and should be submitted this week. D Knox is scheduled for vacation in the near future and this may delay negotiations.

Test Data Coordination

F Homuth and J Hall are developing schedules for TCO data coordination and IDS Data Management planning documents.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

Attachment 1-contd (1 of 3 pgs)

Top of the Rockies
DENVER, COLORADO

UNCLASSIFIED
FACSIMILE TRANSMITTAL
YUCCA MOUNTAIN PROJECT,
HYDROLOGIC INVESTIGATION PROGRAM
MACHINE -- FTS - 776-5047

VERIFICATION FTS - 776-5044

FROM: Falah Thamir
AGENCY: USGS
PHONE: 303-236-5189

TO: Jim Hall
AGENCY: LANL
PHONE: 503-852-7214

NOTE: Jime, here is the information you requested: Give me a call if you have any questions.

NUMBER OF PAGES, EXCLUDING COVER SHEET 2

DATE 03 Nov, 1993

Attachment 1-contd (2 of 3 pgs)

1 of 2

All equipment needs to be programmable through IEEE-488 bus.

		quantity	price $	
1. Scanner				
Keithley	7002 frame	1	3,600	3,600
"	7011-S 40-channel multiplexer	2	1,050	2,100
"	7402 9-channel thermocouple multiplexer	4	650	2,600
"	7014 39-channel thermocouple multiplexer	1	1,300	1,300
				9,600
2. Multimeter				
AC, DC, Resistance measurements				
Internal memory for up to 10 values				
Keithley	199 DMM ($5\frac{1}{2}$ digit)	1	1,100	
or "	2001 DMM ($7\frac{1}{2}$ digit)		3,300	
or H.P.	3457A ($6\frac{1}{2}$ digit)		?	
or H.P.	3458A		?	

3. DC meter for thermocouple psychrometers
Keithley 182 — 1 — 4,000

4. Programmable voltage source to deliver 5 or 10 VDC for input voltage to instruments (≤100mA)
Keithley 230 — 2,600
or American Reliance PPS 1322 (818)575-5110 — ≈ 700

Attacment 1-contd (3 of 3 pgs)

2 of 2

5- Programmable current source
to deliver + 5 mADC (cooling current)
and -.5 mADC (heating current)
to thermocouple psychrometers
(± 0.1 mA accuracy)
Keithley 220 current source 1 4,000
or any other current source that
will meet the above-mentioned specifications.

Above-mentioned Keithley prices do not include the
GSA discount.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9403

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 9193xxx03
LANL Subcontract: 9–X52-Z9658–1

Mon, Dec 6, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9403 - Gillian Hall
Las Vegas, NV, Mon, Nov 29 - Thu, Dec 2, 1993

Next Scheduled Trip
Gillian Hall
Las Vegas, NV No trip scheduled at this time

This Trip Report file was damaged and the text is lost

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc. TRIP REPORT 9402

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 889329501
LANL Subcontract: 9-X52-Z9658-1

Fri, Oct 22, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9402
Las Vegas, NV, Mon, Oct 18 - Thu, Oct 21, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Tue, Nov 2 - Fri, Nov 5, 1993

Trip Summary
Mon, Oct 18, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Tue, Oct 19, 1993
- Met with F Homuth to discuss IDS budget problems for FY94.
- Met with R Rosche and F Lane to discuss current issues.
- Met with F Homuth and R Rosche to discuss software requirements supporting FY94 IDS hardware procurements with the following resolution:
  1. USGS provides all of their own software for RBT
  2. SNL supplies all of their own software to operate the Campbell Scientific datalogger for the Starter Tunnel CM and event logs.
  3. IDS supplies CM software to get data files from the CM datalogger, store these files on the control computer hard disk, and transfer this file to the IDS archiving computer or network server.
  4. The archive computer should be downgraded into a simple PC with a hard disk and modem. This PC will provide data archiving functions via the network and remote data transfer and test interaction via modem.

- Met with F Homuth, L Engwall (M&O), and J Leak (M&O) to check on the problem of the stuck IDS procurement. Apparently the procurement is not stuck now but could be delayed by traceability of requirements driving the IDS design including no FRD requirements in the newest revision of the ESF DR, lack of M&O IDS BFD, and other related issues. We agreed that the appropriate strategy is to convince the RSN DR revision group to incorporate a short term fix referencing the FRD until appropriate portions of the FRD can be incorporated into the ESF DR later this year. J Leak will keep us informed of problems with this approach. B Carlisle (M&O) will take the initiative in this issue.

- Met with F Homuth, C Breeds, and N Elkins to discuss CAG subcontract scope of work and funding for FY94. Funding has been identified for J Hall, G Hall and C Breeds to support TCO identified tasks. B codes for for cost tracking were identified as follows:

Jim Hall	B32H	$250K
Gillian Hall	B378	$50-60K
Chris Breeds	B341 - 1/3	$200K
	B374 - 1/3	
	B378 - 1/3	

π

There was a general discussion of the new M&O high level project documentation rework led by Sam Rindskopf. Recent revisions to the ESF DR have eliminated the reference to IDS definition documents prepared by LANL (FRD) and the M&O (DRD) to guide the IDS design process. The M&O IDS design team is concerned that this lack of requirements traceability to the ESF DR may impact their procurement plans. A recent meeting between F Homuth, J Hall, the M&O designers, and Sam Rindskopf's group identified this problem and future meetings will define our strategy for bringing IDS high level details into the ESF DR and appendices during FY94. F Homuth and J Hall are working with J Leak (M&O budgets) and B Carlisle (M&O IDS) to patch the ESF DR to allow procurements to proceed. Sam Rindskopf made a tentative request that LANL take responsibility for providing text and updates for the ESF DR Appendix B and we will purse this.

- Trip from LANL offices in Las Vegas, NV to Albuquerque, NM in preparation for Wed, Oct 20 meeting with SNL to discuss Construction Monitoring tests..

Wed, Oct 21, 1993

- Met with F Homuth and SNL to discuss planned Construction Monitoring tests for FY94 and out years. See meeting report below.

John Pott
Carl Smith
Jim Hall
Fred Homuth
John McKeever
Larry Costin

CM PI...John Pott confirmed that John Grant is the SNL PI for CM. His office is in the FOC and he will be responsible for all CM field work. He will continue to be assisted by Scott Carlisle (Aggapito?) based in Denver. S Carlisle flies out from Denver for major CM activities and will support J Grant as needed while he comes up to speed. SNL is planning a to install a set of rock bolt load cells (RBLCs) next week. J Pott's new YMP title is CM Task Leader and he handles planning and administrative work for CM under L Costin. L Costin continues to be the CM chief architect and advocate.

Starter Tunnel CM instrument station...Planned CM instrument stations for the Starter Tunnel and in the TBM excavation remain essentially the same as earlier layouts.

Starter tunnel CM schedule...Currently there are now 3 RBLCs be monitored with manual readout boxes. The remainder of the planned starter tunnel RBLCs and MPBxs will be installed and connected to the SNL datalogger in the next 2-3 months.

Starter tunnel CM Data Management...We recommended that IDS Data Management get Starter Tunnel CM data via floppy disk from the SNL datalogger as long as it is operational.

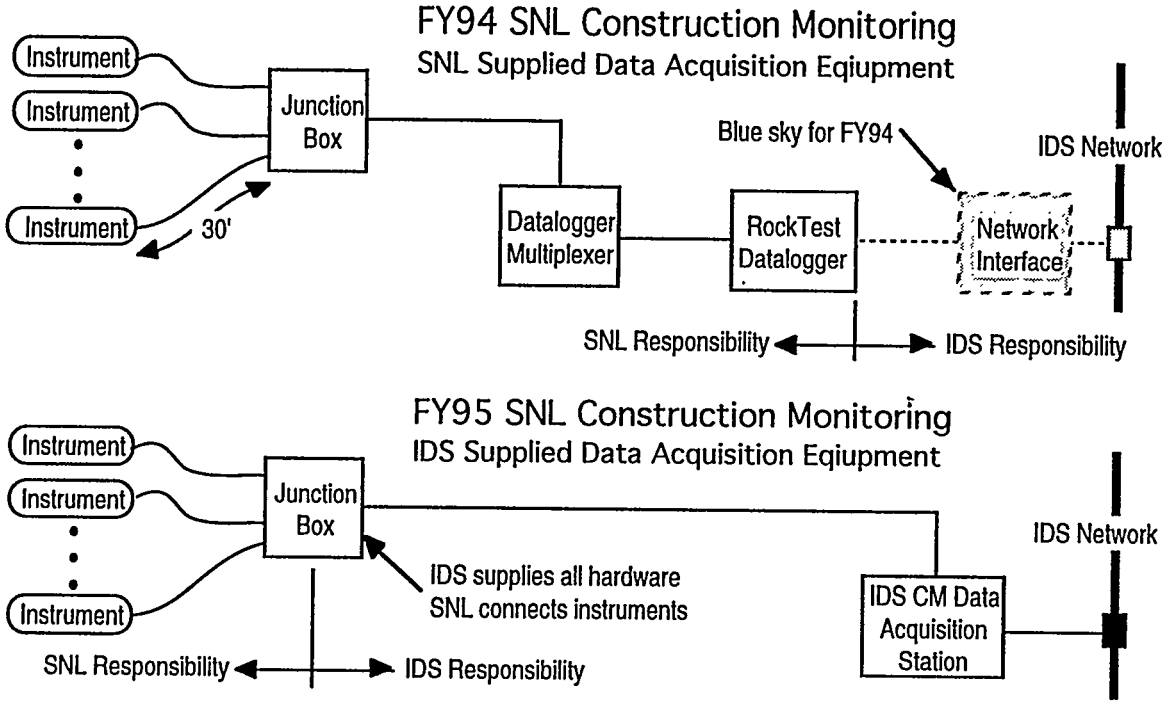
CM instrument stations following the TBM...Once the TBM has excavated through the newly identified unconsolidated material downstream of Bow Ridge Fault, it will begin excavation in earnest at an increasing rate until the full operational rate is reached. In the sequence from the drill and blast starter tunnel, to the Bow Ridge Fault, and through the unconsolidated zone there will be minimal new CM instrumentation installed. L Costin hopes to use the extra ground pressure cells (from the cancelled steel liner) in the unconsolidated zone. TBM assembly and outfitting activities in this sequence will probably make installing more than a few new instruments impossible.

Once the TBM restarts in competent rock (≈Jan 1996), SNL expects the TBM to start to move quickly resulting in about 50 channels/week of CM and related data. We estimate that this will result in installation of a CM DAS unit every 2-3 weeks depending on instrument and cabling layouts. Previous IDS discussions have identified that CM DAS units located on ≈450m centers is the economical break-even spacing. Wider spacing results in cable and installation costs that are break-even and begin to exceed an additional DAS. Closer spacing likewise under-utilizes DAS channel capacity and is uneconomical.

CM schedule following the TBM...L Costin verified that SNL is using the new PK/PB TBM utilization schedule as the basis for their CM instrument station schedules. SNL expects CM stations to be located about every 150m throughout the excavation. Near the Bow Ridge Fault and the unconsolidated zone, CM stations may be located more often, about 200-300 ft apart. Once the TBM starts through competent rock, CM stations will be installed regularly. Since exact locations of instruments are unknown, SNL has estimated that approximately 50 channels/week of data will need to be connected to IDS during normal, full TBM production.

Other CM instrument station details...Planned CM instrument stations for the Starter Tunnel and in the TBM excavation remain essentially the same as earlier layouts.

IDS terminal cabinet needed for manual measurements...SNL confirmed that they expect individual CM instruments and sensors provided by SNL will be terminated in an IDS provided junction box. Each CM instrument comes with a 30 foot long cable pig tail. A screw terminal or tension terminal strip should be provided for all conductors and shield(s) of each instrument cable. This junction box will be used for manual instrument readings using portable readout boxes. The following sketch shows planned SNL and IDS CM instrument cabling concepts:



Effect of TBM delays...SNL expects to use unscheduled TBM delays for continued CM instrument station development supported by IDS DAS units.

Budgets for FY94-95...SNL has not identified additional SNL budgeted CM DAS equipment procurements for FY95 and after. The equipment they are purchasing in FY94 will service their data acquisition upstream of the the Bull Ridge Fault and through the unconsolidated zone downstream of the fault. They expect IDS data acquisition for CM instrument stations after the unconsolidated zone. Utilizing the SNL tentative schedule and the expected instrument installation schedule IDS must be able to install their first CM DAS station in Jan 1995. In the following 1-2 months CM instrumentation will be installed as needed with a target rate at full TBM production of about 50 channels/week with a new CM DAS station installed about very 2-3 weeks. This means that IDS procurement has to have CM DAS equipment ready-to-install in Dec 1994 with 1 additional station every 2-3 weeks thereafter. Assuming that an FY95 procurement is stated in Oct 1994 resulting in CM DAS units available in May 1995, FY 94 procurements would need to have provided 6 DAS units. Related cable and supporting hardware will need to be available on the same schedule. Currently procurements are estimated by the M&O to take from 8-12 months. Tentative budgeting for FY94-95 CM are as follows:

	Number of Units	CM DAS Units $/unit	$ Total	Cables Etc $	Install $
FY94	6	50K	300K	150K	
FY95	18	50K	900K	450K	350K

These estimates must be verified by the M&O and REECo. FY94 IDS capital budget is critical for us to be ready to support FY95 CM data acquisition commitments since FY95 procurements will not be available until late in FY95. We need to persuade YMPO of the need to restore our FY94 capital budget ASAP. Preliminary discussion with L Costin was positive and he indicated that SNL would be willing to send a letter to the TCO identifying the need for IDS and helping support an FY94 CM capital funding request to DOE.

- Returned to Las Vegas, NV

Thu, Oct 22, 1993

- Briefed R Oliver on the Wed, Oct 20 SNL IDS meeting.
- R Oliver asked me to relay to F Homuth that he would like us to identify deliverables scheduled for the next 2-3 months with approximate due dates. These deliverables would include documents like FRD revisions, IDS Data Management Plan, etc.
- R Oliver informed me that he has added himself to the distribution list for all IDS documents to monitor them for content and correctness with respect to test planning. Hmmmm... R Oliver brought up the issue that there is no process now in use to coordinate IDS and other test related activities in the office. Our discussion on this issue ended with no result. It is an important issue and IDS should give it some thought, developing options in preparation for office wide discussions on who-coordinates-what that will undoubtedly take place later this year.
- Met briefly with N Elkins and he asked me to attend the M&O/DOE IDS budget meeting next week with F Homuth to help support the IDS capital budget as needed. This will take some preparation to have useful information and coordination with J Leak to make sure he is on track.
- Received a call from Falah Thamir (USGS) covering several issues:
  1. He still wants IDS or others to procure equipment for long term thermocouple psychrometer (TP) measurements for his Excavation Effects Test (EET). He expects that;
     (a) an IDS procurement would relieve him of the tedium of procurement,
     (b) allow IDS or ESF O&M to procure, maintain and test the basic gear, and
     (c) he would get an integrated assembly from IDS consisting of an enclosure, control computer, and TP measurement equipment ready to use.
  2. He has $25K in his FY94 budget allocated for this procurement that he wants to transfer to the appropriate party, presumably IDS and/or REECo. He needs exact details for this fund transfer.
  3. He has investigated capital vs operating procurements at USGS, Denver. POs for single items or an assembly of multiple items <$5K are operating and >$5K are capital. Several single POs for single items <$5K later assembled into a system and not identified as related on the POs are operating. A single PO with multiple line items <$5K identified as part of a single system valued at >$5K is capital.
  4. He does not want to use Hewlett Packard (HP) equipment identified in earlier USGS lists; instead use Keithley. The Keithley 706 scanner identified earlier has been superceded by a new design (model number not known). His previous list did not include the Keithley scanner cards to be used with the 706. He wants to use new scanner cards also as follows;

(a) 20-Channel Low Voltage Card,
(b) 10-channel Thermocouple Card, and
(c) ?-Channel Low Noise Card

Quantities and additional details will be available next week. I briefed R Oliver on the call and had a brief discussion of TCO policy issues related to this kind of transfer. F Thamir is working through the TCO expecting us to handle this issue in his best interest.

- Had a brief discussion with H Kalia about what went wrong with the M&O defense of the IDS capital budget. Apparently J Leak caved in, defended the wrong items, and lost his temper. We need to help this guy to save our capital budget.
- Returned to Carlton, OR.

Contract

Received contract Modification #8, increasing our contract ceiling by $50K to cover current FY94 contract negotiations.

Test Data Coordination

No action

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.

TRIP REPORT 9401

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

CAG: 889328101
LANL Subcontract: 9–X52-Z9658–1

Fri, Oct 8, 1993

To: Fred Homuth
From: Jim Hall
Subject: Trip Report FY9401
Las Vegas, NV, Mon, Oct 4 - Thu, Oct 7, 1993

Next Scheduled Trip
Jim Hall
Las Vegas, NV Mon, Oct 18 - Thu, Oct 21, 1993
Tasks: IDS

Trip Summary
Mon, Oct 4, 1993
- Trip from CAG offices in Carlton, OR to Las Vegas, NV.

Tue, Oct 5, 1993
- Met with F Homuth to discuss IDS planning and strategy for the remainder of FY93 and the start of FY95
- A recurring issue with informal IDS study plans came up again. F Lane continues to prepare interesting and useful design studies as anonymous documents. We need to again remind the M&O to formally (and simply) document their design studies as part of overall IDS documentation.
- Participated in IDS Planning Meeting scheduled for the remainder of the day.

Wed, Oct 6, 1993
- Participated in continuing IDS Planning Meeting in the morning.
- Met with F Homuth, B Carlisle, R Rosche, and F Lane to discuss IDS technical issues. I recommended action on the following issues:
  1. Use for the IDS data archive has been defined in conventional terms to date. To meet possible future test data needs including such items as images, encapsulated references to related information, and unknown data structures other database strategies need to be considered for the IDS archiving computer. R Rosche should start investigating possible object-oriented data base (OODB) candidates during FY94. Procurement of this database could be planned for FY95-96. This OODB would represent current technology allowing convenient storage of many kinds and formats of data and provide basis for long term IDS test database activities.
  2. Long term archive data storage is a headache because current technologies tend to be

replaced several times over the life time we anticipate for IDS. This causes maintenance of the archive to rely on obsolete and increasingly expensive processes or to be re-archived via a new process or technology. These trends are expected make IDS archive data retrieval harder and more expensive as time passes and increase potential for data loss. Current industry focus on this problem has identified CD ROM technology as demonstrated in music CDs and computer CD ROMs as a good candidate technology for archive data storage. These CD ROMs have been used for several years to distribute operating systems, code, and documentation as well as the current offering of video and data in desktop multimedia offerings. Industry analysts note that this technology will probably persist for 10 or more years primarily because of mass distributed music CDs. In house CD mastering equipment allowing production of 1-off CD ROMs at a material cost of ≈$20 for each 650Mb CD ROM. The equipment has gone through repeated price drops as the technology has evolved over the past three years and in-house mastering system are now available in the $5K-10K range. CD ROMS offer advantages over magnetic and magneto-optical (MO) technologies since they contain no magnetic material magnetics (the strength of magnetization tends to decay with time resulting in data loss) and thus have only to be stored in a controlled temperature environment, protected from physical damage. Actual lifetimes under optimum storage conditions are unknown but are estimated in decades. CD ROM mastering equipment and media promise to become still better and cheaper over time.

F Lane brought up the issue that current draft procurement specifications do not correspond to the direction to the M&O represented by the TCO letter of 10/1/93. The differences are minor and will not effect the IDS specification preparation schedules. This difference is understandable since the direction letter contained new items and in addition we have not yet seen a copy of the draft DAS specifications for reference.

- Attended a YMPO meeting convened by Claudia Newbury to discuss TFM information management transition from the TCO to the M&O. The main focus of the meeting was on the role of the three operative databases involved in TFM management and test/ESF impacts (LANL TFMDB, M&O TIDBITS, and EG&G GENISES). The net result was a consensus that GENISES will be the QA database reference for test analysis and the TFMDB is appropriate to use field data entry in the FOC. EG&G proposes to examine the TFMDB and incorporate appropriate portions. Since the TFMDB was developed in coordination with EG&Gs's plans for network data transfer, this data transfer method is a potential outcome of using the TFMDB in the FOC. A second meeting is planned after the in-preparation-draft of a YMPO TFM planning document containing TFM references has been received by C Newbury. This meeting will provide a more detailed issues of database utilization. In the meantime she indicated that LANL is to continue in their present TFM role including data entry into the TFMDB. Stay tuned!

Thu, Oct 7, 1993

- Participated in continuing IDS Planning Meeting in the morning.
- Attended the M&O scheduled IDS document hierarchy meeting in the afternoon. The M&O document hierarchy team outlined their present strategy for project documents. The M&O observed that the LANL FRD and the M&O DRD are outside newly defined acceptable boundaries for information related to ESF design. I reminded them that this IDS document

hierarchy had been arrived at with the assistance and acceptance of the LANL TPO (R Herbst) and YMPO (T Petrie) under an earlier concept of document hierarchy. The documents and process were consistent with LANL, RSN, and M&O QA programs and were sufficient to define IDS activities. They agreed that this may have been true, however, new players and concepts have resulted in new hierarchical requirements that are not being met by present documents. Discussion resulted in the following proposed concepts:

1. Certain information in the LANL FRD and M&O DRD must be included in the new document hierarchy.
2. High level portions of the FRD should be incorporated into the ESF DR (text by LANL).
3. The results of M&O IDS design studies and portions of their DRD should be incorporated into the IDS BFD by the M&O.
4. The FRD will continue to exist as a LANL controlled document, used to transfer lower level (than the DR) requirements to the M&O design team.
5. Maintaining the DRD is the M&O responsibility and is uncertain. From LANL's perspective there must be some document that describes the conformance of the IDS design to the FRD and DR. This is supposed to be the DRD. The present version of the DRD is weak in this area.
6. An M&O maintained matrix must be developed specifically relating the BFD design description to DR requirements. This would be a subset of a the matrix needed to relate FRD requirements to the IDS design.
7. The M&O proposed that LANL take responsibility for revising and updating DR Appendix B text.

- Returned to Carlton, OR.

Contract
See daily notes above..

TFM
C Breeds has started to work on TFM transition activities.

Test Data Coordination
No action

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

FY94
Memos
&
Other Products

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

MEMO

LANL Subcontract: 9–X52-Z9658–1
Date Mon, Oct 3, 1994

Work completed by CAG and on file in the EES-13 Los Vegas office and not included in this Final Report include the following manuals:

The Tracers, Fluids, and Materials Management System v1.0, Refernce and User's Guide - SYSTEM ADMINISTRATOR COPY, CAG 1993, LA-EES-13-LV-02-94-048, Enclosure 2, 52 pgs

The Tracers, Fluids, and Materials Management System v1.0, Refernce and User's Guide - VIEW ONLY & AS-BUILT USER COPY, CAG 1993, LA-EES-13-LV-02-94-048, Enclosurer 3, 31 pgs

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

INTEGRATED DATA AND CONTROL SYSTEM (IDCS)

FUNCTIONAL REQUIREMENTS DOCUMENT (for Exploratory Studies Facility Testing Support)

Revision 3.0

September 2, 1994

Los Alamos National Laboratory
Exploratory Studies Facility Test Coordination Office
Las Vegas, Nevada

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

INTEGRATED DATA AND CONTROL SYSTEM (IDCS)
FUNCTIONAL REQUIREMENTS DOCUMENT (FRD)
(for Exploratory Studies Facility Testing Support)
Revision 3.0

N. Z. Elkins, Deputy TPO
LANL TCO

Date

E.F. Homuth, IDCS Coordinator
LANL TCO

Date

TABLE OF CONTENTS

		Page
1.0	SCOPE	3
1.1	Introduction	3
1.2	Purpose of the Functional Requirements Document (FRD)	3
1.3	Incorporation of FRD Requirements into IDCS Design	3
1.4	Responsibility for Preparation and Maintenance of the FRD	3
1.5	Document Organization and Description	4
	1.5.1 FRD Organization	4
	1.5.2 Requirements Traceability	4
	1.5.3 Requirements to be Determined	4
	1.5.4 Functionality Stated as Goals	5
	1.5.5 General Functionality Requirements	5
1.6	Description of the Requirements Analysis	7
2.0	PROGRAM REQUIREMENTS	8
3.0	MANAGE DATA	9
3.1	Acquire	10
	3.1.1 Collect Test Data	10
	3.1.2 Collect Supporting Data	11
	3.1.3 Manual Data Entry	12
	3.1.4 Transfer to IDCS	12
3.2	Process	13
	3.2.1 Data Conversion	13
	3.2.2 Calibration	14
	3.2.3 Test Control Functions	14
3.3	Store	15
	3.3.1 On-Line	15
	3.3.2 Test Data Archive	15
	3.3.3 Backup	16
3.4	Access	17
	3.4.1 Controlled Database Transfers	17
	3.4.2 Unverified Database Transfers	17
	3.4.3 Finding Data On-Line	18
	3.4.4 On-Line Reports	18
	3.4.5 Security	19
3.5	Operations	20
	3.5.1 Operate	20
	3.5.2 Maintenance and Diagnostics	21
	3.5.3 Status Records and Reports	22
4.0	CONFORMANCE VERIFICATION	23
4.1	Verification of Requirements	23
4.2	IDCS Organizational Responsibility Matrix	23
5.0	PREPARATION FOR OPERATIONS	24
5.1	Operational Acceptance Tests	24
5.2	Operation	24

APPENDIX A: Test Identification and Expected DAS Needs 25

APPENDIX B: Test Identification and Location 26

APPENDIX C: Projected Test Data Rates 27

APPENDIX D: Test Data Management 32

APPENDIX E: Bibliography and References 36

APPENDIX F: Acronyms and Abbreviations 37

APPENDIX G: DOE Action Plan Reference Matrix and IDS TAR Notes 38

1.0 SCOPE

1.1 Introduction

The Yucca Mountain Site Characterization Project (YMP) of the US Department of Energy (DOE) is tasked with designing, constructing, and operating an Exploratory Studies Facility (ESF) at Yucca Mountain, Nevada. The purpose of the YMP is to provide detailed characterization of the Yucca Mountain site for a potential mined geologic repository for permanent disposal of high-level nuclear waste from commercial reactors and other nuclear facilities. Detailed characterization of properties of the site will be conducted through a wide variety of short-term and long-term in situ tests. Tests will be conducted during and after ESF construction. Testing methods require the installation of a large number of test instruments and sensors with a variety of functions. These instruments will produce analog and digital data that must be collected, processed, stored, and evaluated in an attempt to predict the performance of the repository. The Integrated Data and Control System (IDCS) is envisioned as a distributed data acquisition system that electronically acquires and stores data from these test instruments. IDCS designers will design and oversee the procurement of the system, IDCS Operation and Maintenance (O&M) will operate and maintain the installed system, and the IDCS Data Manager will be responsible for distribution of IDCS data to participants.

1.2 Purpose of the Functional Requirements Document (FRD)

This document defines functional requirements necessary for design, operation, and data management of the IDCS to support ESF test activities. A summary listing of detailed IDCS test requirements and supporting information is listed in the appendices. Any new requirements that are identified, will be documented, reviewed, approved, and distributed to the IDCS designer, pending incorporation into the FRD. The FRD will be revised to incorporate these requirements as needed.

1.3 Incorporation of FRD Requirements into IDCS Design

Functional requirements are developed by participants and submitted for incorporation into the FRD. The FRD is then translated and documented in design requirements, used as the basis for IDCS design. These design requirements provide traceability between individual FRD requirements and specific design elements. Consistency between the FRD and design requirement documents will be documented through the release of periodic revisions of these documents as the design progresses. As the testing interface organization, the Los Alamos National Laboratory (LANL) ESF Test Coordination Office (TCO) shall distribute IDCS design documents to participants or their representatives to be reviewed and accepted, prior to incorporation into the IDCS design.

1.4 Responsibility for Preparation and Maintenance of the FRD

The FRD was developed and is revised by the LANL ESF TCO. The FRD is based on higher level requirements documents and participant information, and is controlled under an approved quality assurance program.

1.5. Document Organization and Description

1.5.1 FRD Organization

Section 1: *Scope.* This section presents an overview of the FRD, a description of the requirements analysis, and general requirement goals.

Section 2: *Program Requirements.* This section presents describes Program requirements for the IDCS design and operation.

Section 3: *Manage Data.* This section presents functional requirements derived from the functional analysis and requirements for test data acquisition.

Section 4: *Conformance Verification.* This section addresses conformance verification and includes requirements and a responsibility matrix.

Section 5: *Preparation for Operations.* This section contains operational requirements for preparation of the system for acceptance and operation.

Appendices: This section contains supplementary design information to characterize test data acquisition support and other information related to understanding this document.

Appendix A: Test Identification and Expected Data Acquisition Station (DAS) Needs

Appendix B: Test Identification and Location

Appendix C: Projected Test Data Rates

Appendix D: Test Data Management

Appendix E: Bibliography and References

Appendix F: Acronyms and Abbreviations

Appendix G: DOE Action Plan Reference Matrix and Integrated Data System (IDS) Technical Assessment Review (TAR) Notes

1.5.2 Requirements Traceability

The Exploratory Studies Facility Design Requirements (ESFDR), Site Design and Test Requirements Document (SD&TRD), and Quality Assurance Requirements and Description (QARD) establish the requirements for an IDCS to support test data acquisition. Detailed functional requirements result from participant Study Plans, test planning documents, and other participant approved documentation describing data acquisition functional and detailed design requirements reviewed, approved, and controlled through the QA program.

1.5.3 Requirements to be Determined

Some requirements contained in Section 3 and the Appendices may change as tests are fully developed and implemented. Existing requirements will be modified or new requirements developed in response to changing participant test requirements. All changes to FRD requirements will be based on participant information that has been reviewed, approved, and controlled through the YMP QA program.

1.5.4 Functionality Stated as Goals

Functionality and constraints expressed as goals in this document are included to identify important, detailed requirements significant for satisfying high-level Project requirements (ESFDR, SD&TRD, QARD), participant testing requirements (Study Plans and supporting information), and operational constraints. In the design process, it is expected that the validity and applicability of these goals will be addressed and practical methods identified for achieving IDCS implementations that satisfy the stated requirements. If the identified goals cannot be met within available budgets or technologies, it will be necessary to reevaluate the stated goals and develop acceptable alternatives. The IDCS shall support the following general functionality and capabilities:

Acquire data from all identified participant tests and related equipment.

Process and Store collected data in the IDCS data storage system.

Access and transfer stored data to participants as directed by the IDCS Data Manager.

Operate and maintain the IDCS system.

1.5.5 General Functional Requirements

The IDCS is the designated system for collecting data and other test related information from ESF site characterization tests. The continuous nature of the testing program requires attention to the following issues:

Functionality:

- Collected data shall be recorded and stored in the IDCS.
- On-line access to test data shall be exclusively available to the owner participant only.
- Scheduled data back-ups shall protect all stored information pending transfer to participants.
- An off-line data archive shall be maintained containing a duplicate record of all IDCS test information.
- Data transfers from IDCS are limited to transferring participant's data to their organization or DOE at the direction of the IDCS Data Manager. The IDCS Data Manager will distribute data based on participant requests or as directed by DOE.
- Data collected and stored by IDCS and distributed by the IDCS Data Manager shall be verified for IDCS processes and management activities, not scientific veracity.

Physical Equipment:

- Good system reliability is essential to meet testing and operational goals and to provide user confidence in the credibility of the collected data. Use of standard off-the-shelf commercial products is considered acceptable. No extraordinary effort beyond manufacturer's recommendations for calibration and repair is needed to meet IDCS reliability requirements.
- System redundancy shall be considered only where necessary to protect the system from catastrophic data loss due to IDCS disruption. Participant sensitivity to lost data shall be a factor in determining the need for redundancy.
- DAS units may be implemented as equipment mounted in rugged enclosures for use in the tunnel environment or mounted in equipment racks used in underground shelters.

- The design should emphasize modular and reusable components that can be procured rapidly to provide a flexible, field configurable system.

- It will be important to size the IDCS design to accurately reflect anticipated requirements (e.g., number of channels and data rates) including provision for a reasonable expansion (15-20% minimum) to accommodate expanded testing requirements.

- Portable IDCS data acquisition stations (DASs) shall be part of the design to accommodate small, short term tests. Each portable DAS will be used to monitor a variety of tests and will not be permanently assigned to any particular test. Portable units shall be transportable and consist of a standard DAS configured for general purpose measurements. Portable DASs shall be functionally identical to stationary units including workstation ports and network connections.

Operations:

- Operations and maintenance (O&M) issues shall be evaluated in developing the modular design. It is critical that the system can be installed, expanded, and maintained as needed without disruption of existing data acquisition activities and subsequent loss of data.

- Operational life of the IDCS is determined by facility maintainable life design requirements. No extraordinary effort beyond standard commercial practices is needed to meet IDCS maintainable life considerations.

- Operational and repair strategies must be developed for each test that include consideration of system downtime and resulting data loss acceptable to participants.

- Continuous 24-hours-per-day operation shall be provided with automatic data collection from all designated sensors without operator intervention.

- Testing activities require modular system implementation to ensure test data acquisition support under all operating conditions. This will allow stand-alone data acquisition to continue in the absence of the IDCS computer center, networks, and supporting high-level operations software.

- IDCS is expected to be installed in stages in the surface facility and in the ESF as needed to support installed tests. Separate subsystems would be acceptable where the overall performance meets the functional requirements for the system.

- The exact number and configuration of IDCS data collection channels for each test may change during test planning, design, installation, and operation based on testing conditions. To provide operational flexibility, selected DAS units shall be configured for a limited number of general purpose measurements in addition to supporting a specific test configuration. Individual DAS units may collect data from more than one test.

- The IDCS is currently proposed as a multiple use system gathering data from ESF testing and ESF Facility Monitoring and Control System (FM&CS) operational systems (i.e., safety, construction, and others). It is critical that non-testing data acquisition and control activities do not impact testing functions, which could result in equipment availability delays or operational or data distribution problems.

1.6 Description of the Requirements Analysis

This analysis establishes system requirements for the IDCS. These system requirements will implement the data management function for providing a high-quality data acquisition system to participants and YMSCO. The functional analysis is based on the overall IDCS mission, which is to operate the IDCS to acquire, process, store, and distribute site characterization data.

The functional analysis is composed of a graphical representation (diagram) of logical and essential elements depicting the overall requirements for design. Elements are displayed with the highest-level activity (or most general concept) located in the top-most position in the diagram. Detailed analysis expands the high-level conceptual elements into more specific concepts and categories. Text describing essential elements and specific requirements is included. A complete, high-level diagram of the entire analysis is provided in Figure 1.6 below.

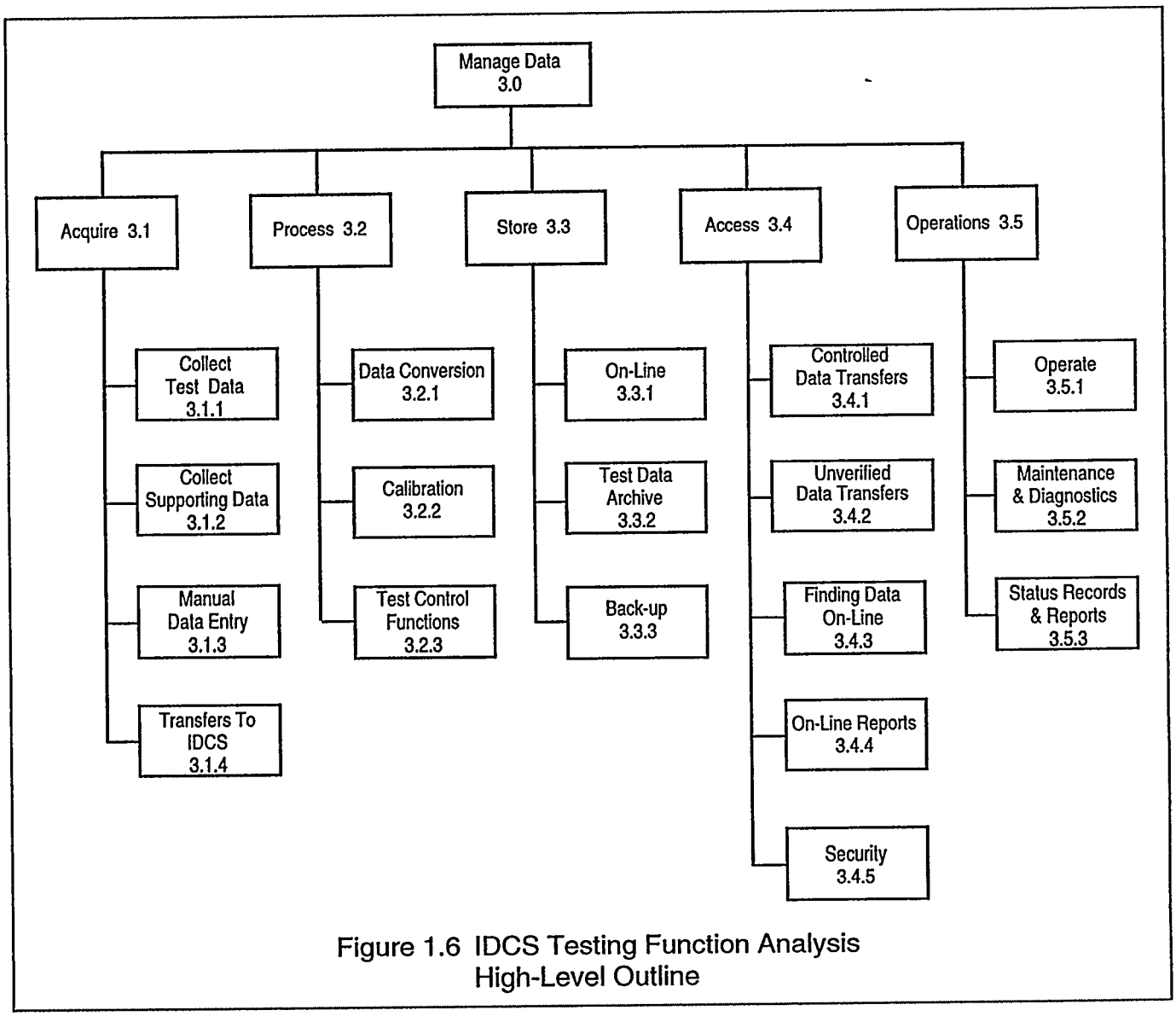


Figure 1.6 IDCS Testing Function Analysis
High-Level Outline

2.0 PROGRAM REQUIREMENTS

IDCS test requirement implementation in IDCS design and operations shall be in compliance with applicable portions of the following orders and requirements documents:

DOE/RW-0333P	Quality Assurance Requirements and Description (QARD)
YMP/CM-0021	Site Design and Test Requirements Document (SD&TRD)
YMP/CM-0019	Exploratory Studies Facility Design Requirements (ESFDR)
DOE	*US Department of Energy*, letter from C. P. Gertz (DOE) to All Participant PIs, *Revised U.S. DEpartment of Energy (DOE)/U.S .Nuclear Regulatory Commission (NRC) Procedural and Project-Specific Agreements (SCP: N/A)*, dated September 1, 1993, with Enclosures 1 and 2 and Appendices 1-7.
DOE Orders	
1330.1D	Acquisition and Management of Computer Software
1360.1B	Acquisition and Management of Automatic Data Processing Equipment and Resources
1360.2B	Unclassified Computer Security Program
1360.3C	Automatic Data Processing Standards
1360.4B	Scientific and Technical Computer Software
1360.6A	Automatic Data Processing Equipment/Data Systems
1450.1C	Acquisition, Utilization, and Administration of Teleprocessing Services
1430.1C	Management of Scientific and Technical Information
1450.2	Teleprocessing Services Program Points of Contact
4700.1	Program Management System
5300.1B	Telecommunications
5480.7A	Fire Protection
5700.2D	Cost Estimating, Analysis, and Standardization
6430.1A	General Design Criteria

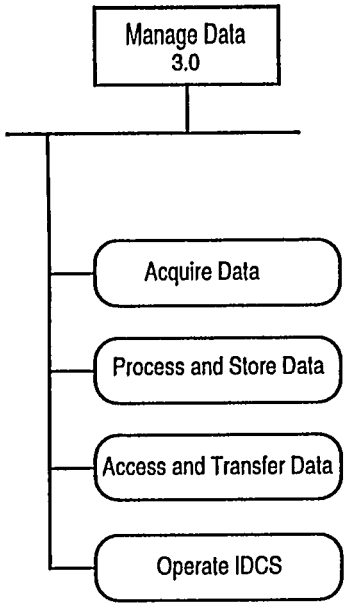


Figure 3.0-1 Manage Data (Testing)

3.0 MANAGE DATA

The IDCS Data Manager will be responsible for managing the distribution of all controlled test data from IDCS data storage. All distributed data will be archived for later access as required. The actual tasks of developing, copying, and transmitting distribution data sets will be accomplished by IDCS operators under the direction and control of the IDCS Data Manager. Appendix D identifies and describes the functions of the IDCS Data Manager. IDCS operations may release uncontrolled copies of data at the request of authorized participants or YMSCO. Data reports and other forms of reporting data are the sole responsibility of participants.

Acquire Data: IDCS will acquire data from participant test instruments, sensors, and equipment as required.

Process and Store Data: All acquired data will be processed as necessary and stored in IDCS data storage.

Access and Transfer Data: The primary purpose of IDCS test support is to provide controlled, test data to participants that has been verified through the IDCS data acquisition process. The IDCS Data Manager shall be solely responsible for test data distribution from the IDCS to participants and DOE.

Operate IDCS: The IDCS will be operated and maintained in a manner that supports testing requirements and meets Project controls.

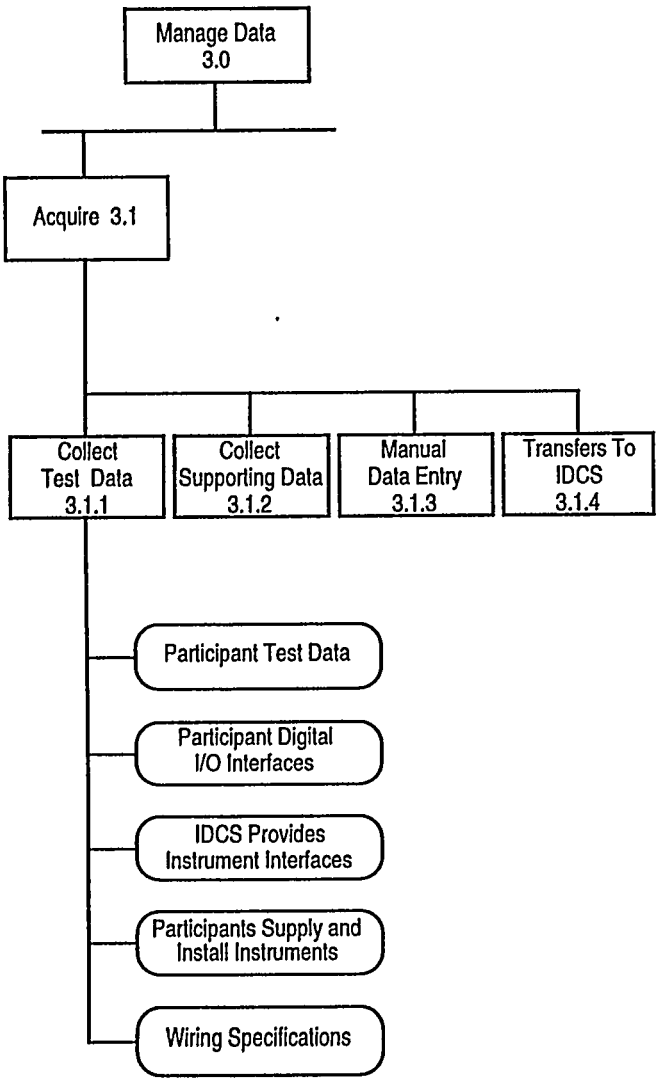


Figure 3.1-1 Collect Test Data

3.1 Acquire

3.1.1 Collect Test Data: The IDCS shall collect and process all required data from participant test activities including test data, calibration checks, checkout tests, installation tests, acceptance tests, and operational tests in the ESF.

Participant Test Data: The IDCS shall acquire data from participant tests and supporting data sources to document testing activities. IDCS components shall provide needed instrument excitation and process input signals as required. Test equipment has not been defined for all tests, however, data acquisition source equipment is expected to include the following:

- Analog output sensors
- Digital output instruments
- Participant computers and data acquisition systems
- Set point and programmable logic controllers
- Video cameras

Strategies for transmitting video camera analog output signals from test locations to the computer center for recording and viewing shall be part of IDCS design, to be implemented as needed.

Participant Digital Input/Output (I/O) Interfaces: Provision for user data entry into IDCS data storage from tapes, disks, terminals, networks, computer systems, control I/O equipment, dataloggers and other portable data acquisition equipment shall be supported by IDCS hardware and software as needed.

IDCS Provides Instrument Interfaces: IDCS shall provide the participant equipment connection interface to IDCS unless it is an integral part of participant equipment.

Participants Supply and Install Instruments: Participants shall provide test equipment (sensors, instruments, and related equipment) and placement, installation, connection, and wiring from individual components to the IDCS interface connection point.

Wiring Specifications: IDCS designers will specify, with participant concurrence, wiring connections, routing, protection, cable type, and shielding from the IDCS interface connection points to the IDCS I/O connections and subsequent IDCS equipment. Participants are responsible for all wiring from the instrument connection interface to their test equipment.

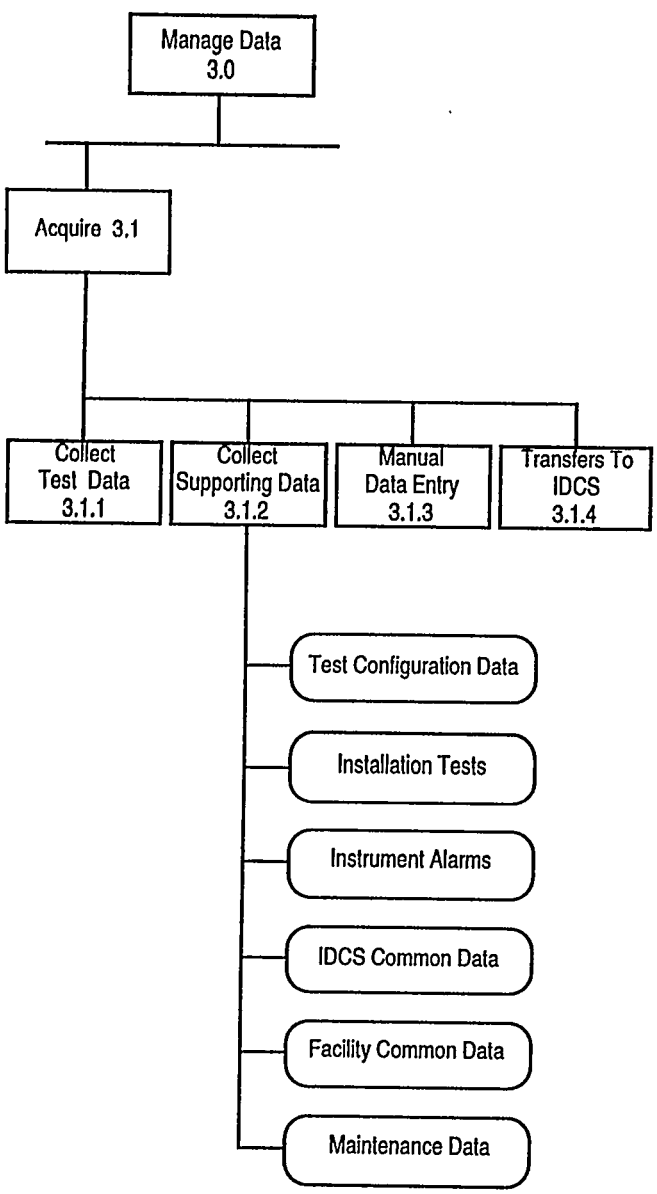


Figure 3.1-2 Collect Supporting Data

3.1.2 Collect Supporting Data: The IDCS shall collect and process supporting test related information from each test.

Test Configuration Data: Provision shall made to include test characterization information in IDCS data storage including the following information:

- test identification
- instrument identification
- instrument type
- instrument location
- instrument operational status
- instrument calibration status
- instrument data conversion algorithm(s)
- logical and actual channel identification

Installation Tests: The IDCS shall be available to collect supporting data from checkout tests, calibration checks, installation tests, acceptance tests, test data acquired during installation, and maintenance at any time prior to the start of routine data collection.

Instrument Alarms: Alarms signaling instrument malfunction and signals exceeding preset excursion limits shall be available as required to meet testing requirements. Alarm status shall be recorded with the data. Multi-step alarms shall have unique identifiers for each step. Alarms shall be configurable to initiate system control functions.

IDCS Common Data: IDCS common data shall include operational parameters critical to IDCS operation and standard or reference measurements used for internal operational and calibration checks. The IDCS shall include diagnostics capable of detecting and recording malfunctions in I/O signal converters and critical processor functions.

Facility Common Data: The IDCS shall be capable of collecting common data items from facility safety, construction, and support equipment. Participants will identify data from these sources that is required for a particular test activity. To be acceptable to the testing program, facility common data must be generated, collected, and controlled under the appropriate participant or operator QA program.

Maintenance Data: The IDCS shall be capable of recording all maintenance information.

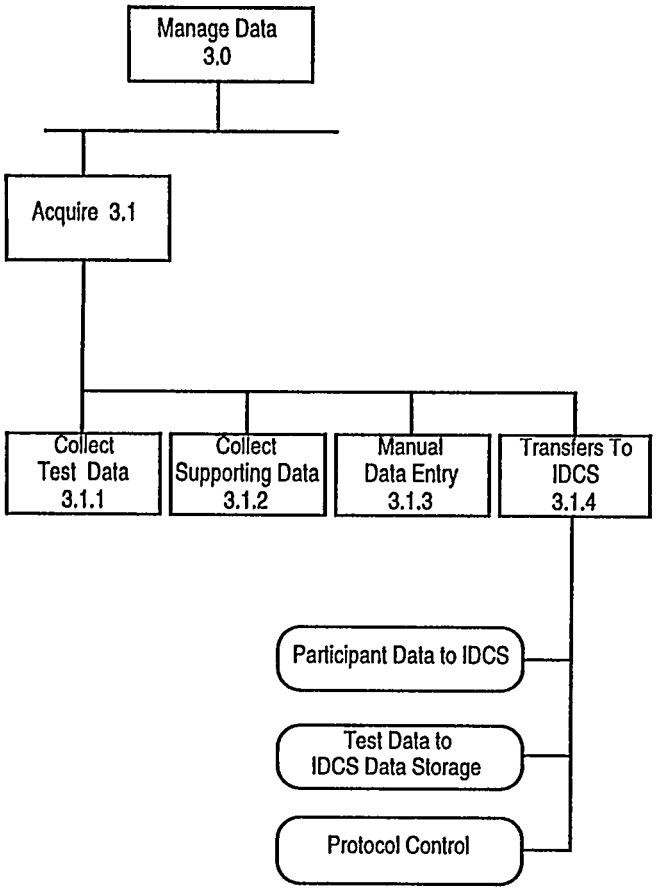


Figure 3.1-3 Data Transfers

3.1.3 Manual Data Entry: The IDCS shall support manual input of test data and text items. This information may come from portable terminals located near test sites, participant user areas, IDCS operations and maintenance areas and remote computers. Manually entered data and data files shall include the following minimal information embedded in the file or in a header; data value and units, acquisition time and date, and source identification. The IDCS shall store manually entered data files without modification and organize the data files in a standardized format based on participant instructions and IDCS conventions. Verification of manually entered data shall be provided by participants.

3.1.4 Transfers To IDCS: Digital data transfer from terminals, communications networks, computer systems, control I/O equipment, dataloggers, and portable data acquisition equipment to IDCS processing and storage devices shall be supported by industry standard computer interface protocols as appropriate. Datalogger and portable data acquisition equipment interface protocols shall be specified after participant equipment requirements have been identified. All data transfer protocols shall be specified by the IDCS designer unless they are an integral part of participant hardware and software. Participant interface support shall be implemented jointly by IDCS and each participant.

Participant Data to IDCS: Participant sensors connected to IDCS Data Acquisition Stations (DASs) located at test sites will be the primary test data input to IDCS.

Test Data to IDCS Data Storage: All test data acquired during testing activities will be stored in the DAS and immediately transferred to the central IDCS data storage. The IDCS shall process the data as required.

Protocol Control: The IDCS shall provide data transfer protocols or methods that ensure successful data transfers between IDCS modules, subsystems, and data communication networks. Where IDCS controls the data transfer, transmitted data shall be retained in the transmitting module or subsystem until an acceptable data transfer has been confirmed. In the case that data is transferred from participant equipment to IDCS, prompt verification of the transfer with the originator shall be an integral part of system operation.

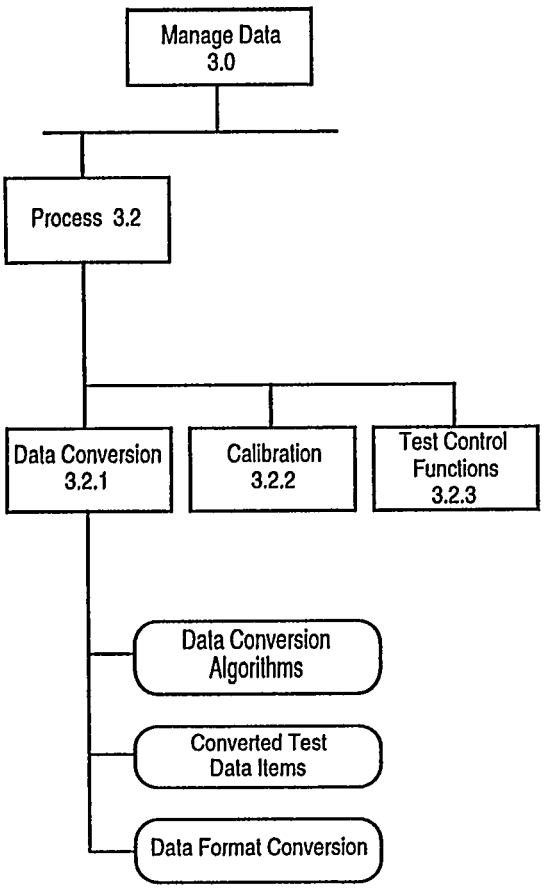


Figure 3.2-1 Data Conversion

3.2 Process

3.2.1 Data Conversion: The IDCS shall provide data conversion as required for test and common data. This data conversion will typically include converting unscaled data into engineering unit data (e.g., thermocouple microvolt signals to °C). Participant requirements for alarm monitoring and test evaluation may require additional data conversions not yet identified. All data converted by IDCS software processes shall be clearly identified in data files. Documented data conversion algorithms shall be available and provide traceability between input data, data conversion method, and converted data..

Data Conversion Algorithms: Data conversion algorithms shall be incorporated into IDCS software as required to meet specific participant requirements. Data conversion algorithms shall be provided by IDCS or participants and verified before being installed and used. Commercial equipment used for IDCS may contain built-in data conversion hardware, firmware, and software to automatically convert instrument signals into engineering unit data. Procurement acceptance testing and periodic calibration shall be done in accordance with applicable Project procedures.

Converted Test Data Items: Data conversion shall preserve the original input data. The IDCS shall automatically convert raw data to new data items with units and precision specified by participant requirements. Certain commercial hardware, software, or firmware may convert sensor raw data to engineering units directly without recording or providing raw data. There will be no raw data source files for these sensors.

Data Format Conversion: Data generated external to the IDCS and supplied for inclusion in the IDCS data storage shall be entered in an IDCS specified format. When the IDCS must modify the format of the entered data to meet IDCS data storage format requirements, the data format conversion shall be performed by the participant prior to inclusion into the IDCS. Non-standard format data files will be stored as ASCII text or in binary form, precluding complex data storage searches for embedded information.

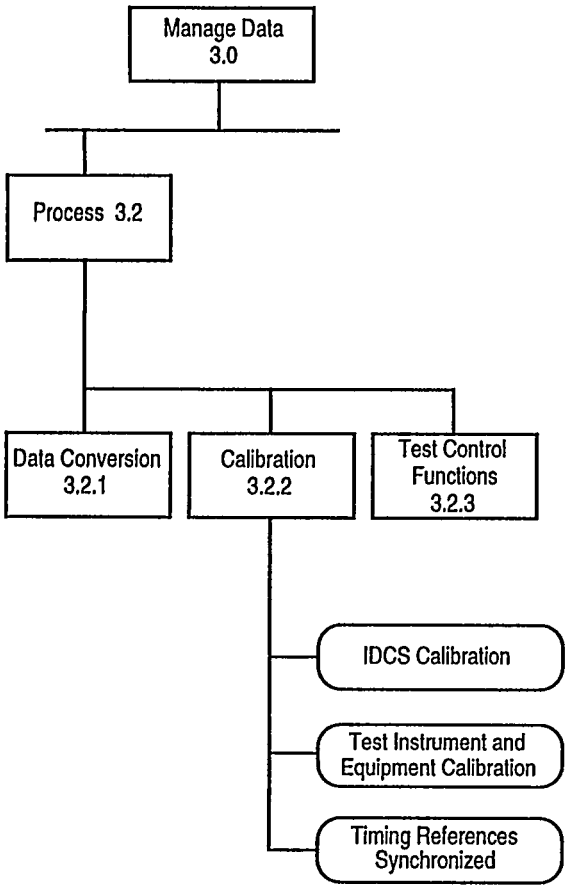


Figure 3.2-2 Calibration and Test Control Functions

3.2.2 Calibration: All IDCS equipment calibrations shall be traceable to the National Institute of Standards and Technology (NIST) or equivalent standards acceptable to DOE and shall maintain participant requirements for accuracy and resolution.

IDCS Calibration: Calibration methods and schedules must be shown to support IDCS data acquisition accuracy requirements for each test. No extraordinary effort beyond standard commercial practice will be needed to maintain required IDCS accuracy.

Test Instrument and Equipment Calibration: All test sensor, instrument, and equipment selection, procurement, inspection, storage, calibration, characterization, installation, wiring, and maintenance is the responsibility of the participants.

Data-Timing References Synchronized: All IDCS system and subsystem clocks shall be synchronized. Data-timing references shall be recorded to a resolution of 0.1 second with an accuracy of 1 second between all data items. Time standard synchronizing signals used externally to IDCS shall be included in the IDCS design and implemented as needed to satisfy participant requirements.

3.2.3 Test Control Functions: No requirements for IDCS control of participant test equipment are currently identified. IDCS test control functions shall be defined by participant requirements. Adequate system flexibility shall be incorporated into the design to allow test controls to be added to the IDCS later in the testing program.

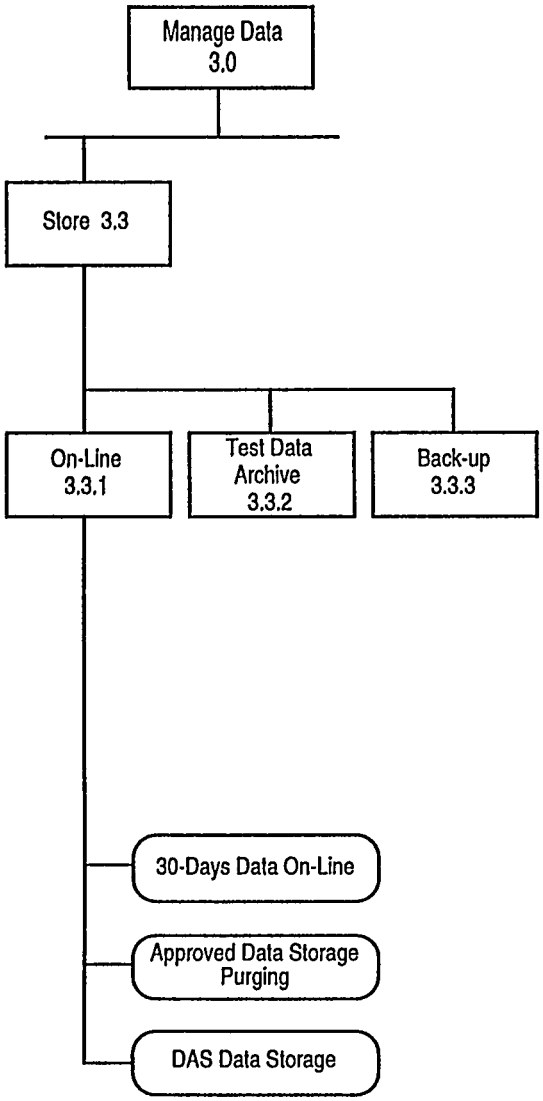


Figure 3.3-1 On-Line Data Storage and Test Data Archive

3.3 Store

Test data stored in IDCS data storage shall include raw and converted data value, time, date, and source identification. The IDCS shall logically organize acquired data, based on acquisition time, date, and originating test. The source identification shall provide access to instrument and test configuration and operational details.

3.3.1 On-Line: On-line data shall be organized to provide ready access.

30-Days Data On-Line: On-line IDCS data storage shall provide storage for the most recent 30 days of test data, and, as available, configuration status, IDCS component and instrument calibration data, and performance event logs. Where data storage capacity is available, more than 30 days of test data should continue to be accumulated on-line.

Approved Data Storage Purging: Removal of data from IDCS data storage shall be approved by the IDCS Data Manager and determined by available storage requirements and participant needs for continued on-line access.

DAS Data Storage: DAS units shall store recently acquired data in local mass storage. The mass storage capacity will be sized to accommodate test data rates. This data shall be available for retrieval from networked or local workstations.

3.3.2 Test Data Archive: The IDCS shall maintain archive records of all information stored in IDCS data storage including raw and converted data, system performance logs, system and instrument configuration, calibration records, and performance event logs for the operational life of the IDCS. The archive will provide data continuity for operations and participant data access during IDCS operation. Archive data storage shall be accomplished prior to removal of data from IDCS data storage. IDCS shall provide physical storage for archive media at the test site readily accessible to the surface IDCS computer center for timely retrieval of archive data.

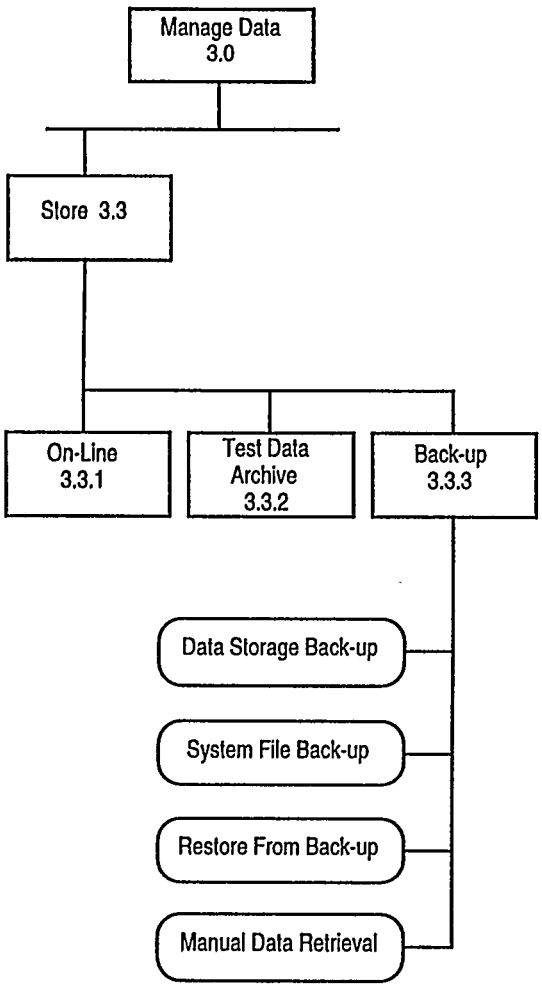


Figure 3.3-2 Data and System Back-up

3.3.3 Back-up: To protect against loss of test data, data files shall be written to nonvolatile back-up as often as practical.

Data Storage Back-up: The IDCS, including all subsystems, shall provide back-up storage of all current data files to nonvolatile media (i.e., optical or magnetic disk drive) as a routine part of data processing. DAS units shall have capacity to retain data in nonvolatile back-up storage for a minimum of thirty days before the oldest data is overwritten with new data.

System File Back-up: All system files, operating system, and related files shall be written to nonvolatile back-up no less than once per day.

Restore From Back-up: Back-up hardware and software shall be capable of completely restoring data and system files from back-up media. Back-up restoration shall result in operational functionality for all systems (i.e., central computer, IDCS database, and DAS).

Manual Data Retrieval: The IDCS shall provide for manual data retrieval from subsystems (e.g., DASs). Each subsystem shall provide a connection for writing the contents of storage to a portable tape or disk drive, removable secondary mass storage back-up unit(s), or a suitable portable computer.

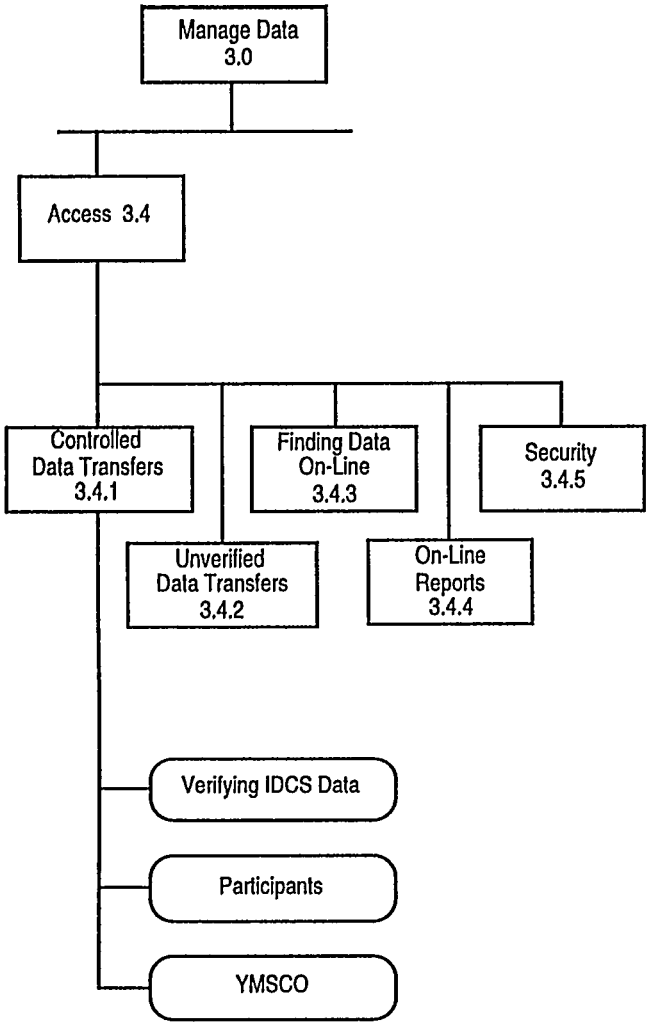


Figure 3.4-1 Controlled Data Transfers and Unverified Data Transfers

3.4 Access

User access to IDCS data shall be primarily from IDCS central computer data storage or test DASs. Access to the IDCS data storage and archive shall be read-only to protect data integrity. Data shall be organized in a logical manner emphasizing efficient access by users.

3.4.1 Controlled Data Transfers: All data transfers from IDCS data storage to approved recipients shall be in compliance with applicable Project and participant procedures and controls. Routine transfers of data from the IDCS to identified requesters shall be initiated by the IDCS Data Manager according to participant requested schedules. Data transfer format and media shall conform to an IDCS standard specification. Distribution shall be accomplished through physical delivery of storage media or printed text as specified by the requester. The only currently identified requesters are participants and YMSCO.

Verifying IDCS Data: The functionality of IDCS data processing, operation (i.e., configuration, calibration, scheduled maintenance, activity logs), and data management procedures will be controlled through the Project QA program. IDCS Data Management distribution data sets shall be verified to be accurate representations of data collected by the IDCS. Verification of the data as an accurate representation of test information and validation of the data for analysis purposes is the sole responsibility of the participants.

Participants: A copy of participant specified data sets derived from IDCS data storage shall be distributed to the participant's designated record center as directed by the IDCS Data Manager based on participant requirements. Distribution data sets shall include only data from the recipient organization's tests.

YMSCO: YMSCO may direct IDCS data set distribution to participants, YMP staff, or Project record centers at any time. By YMSCO directive, distribution data sets may include data from more than one participant. Distribution of IDCS data outside the Project is the sole responsibility of YMSCO.

3.4.2 Unverified Data Transfers: Unverified IDCS data is any IDCS data distributed outside the formal IDCS Data Management test data set distribution process. Unverified IDCS data cannot be validated to QARD Supp.III (no traceability to the source) and therefore is not useful for site characterization analysis or reporting. Distribution of unverified data to testing organizations and YMSCO shall be available, on request, directly from IDCS data storage at the computer center and via access from the IDCS network, modem, or other telecommunication links specifically approved by YMSCO. On-line access to test data shall be exclusively available to the owner participant only.

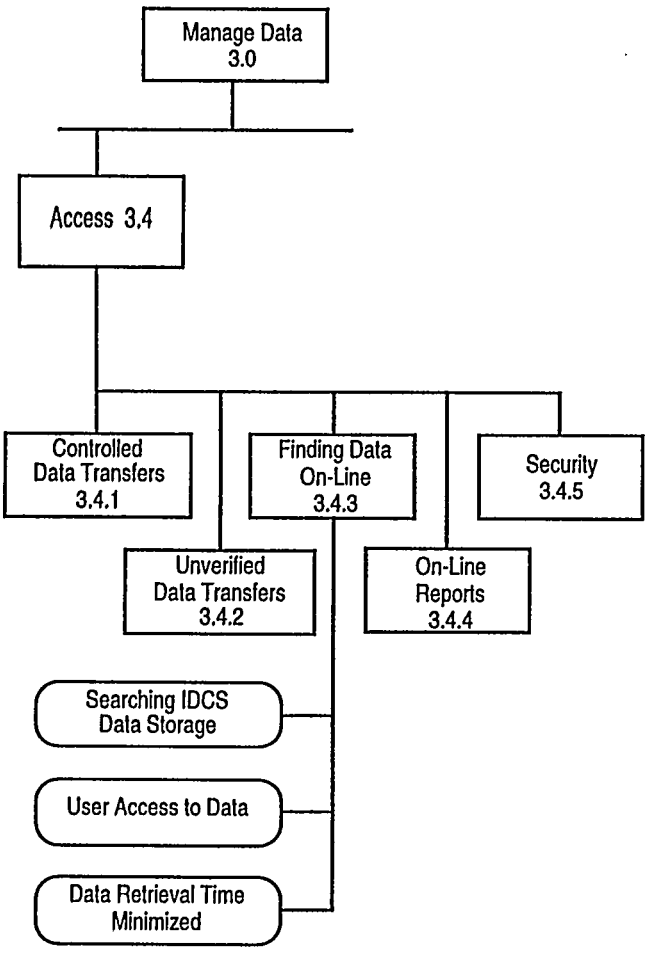


Figure 3.4-2 Finding Data On-Line and On-Line Reports

3.4.3 Finding Data On-Line

Searching IDCS Data Storage: The IDCS shall provide unique identification of test-related data. The data identifiers shall enable logical searches for data in IDCS data storage by participant, test, location in the ESF, date and time, measurement type or parameter, instrument type, specific instrument identification, and other related information specified by users.

User Access to Data: Participants and other qualified users working at the site will access test information from IDCS data storage. IDCS data storage access shall be available at the computer center or in the ESF from user terminals or workstations. In addition to IDCS data storage access, a direct connection to local DASs from a user terminal or workstation shall be provided. This direct DAS connection will allow users to access a limited time span (limited by DAS data storage capacity) of test data. Data available from this direct connection may be limited to the test(s) associated with the source DAS and include the complete test instrument array connected to the DAS. Access to test data from IDCS data storage or from DASs shall be exclusively available to the owner participant only.

Data Retrieval Time Minimized: Data retrieval response time to IDCS data storage queries shall be minimized by system design. During test installation and maintenance a responsive system will be very important to maintain timely schedules and minimize repair times. Substantial retrieval delays will seriously impact the usefulness of the IDCS data.

3.4.4 On-Line Reports: IDCS shall provide software supporting parameter versus time plots and data trending. IDCS shall provide control software and printers and plotters to produce user defined reports. Black and white, gray scale, and color printing and plotting facilities shall be available.

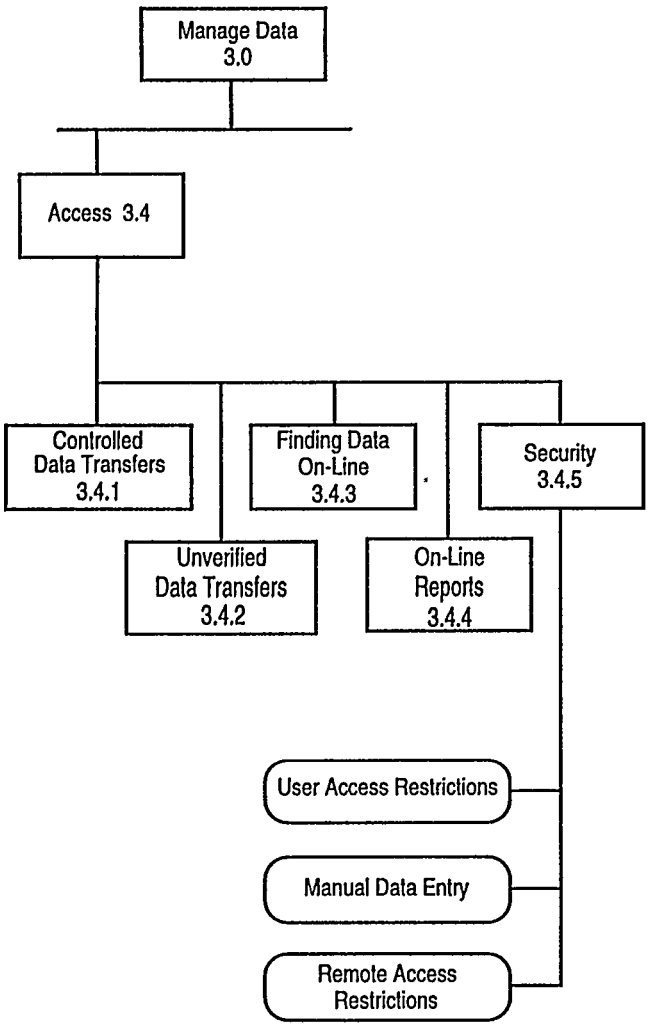


Figure 3.4-3 Security

3.4.5 Security: Computer security measures shall be used to ensure that unauthorized personnel cannot gain access to IDCS computers and system for any purpose. Access to IDCS computers shall be managed to prevent users from willfully or negligently altering or destroying data.

User Access Restrictions: Authorized users of the IDCS shall include participant testing personnel, IDCS design personnel, and IDCS operations personnel. User access levels shall be assigned by the IDCS computer center manager. Participant access to all IDCS data shall be read-only for existing data files. Computer access procedures shall utilize effective techniques for identifying authorized users and preventing unauthorized connections. Methods selected shall be consistent with efficient, semiautomatic log-on processes involving minimal user interaction and in accordance with YMSCO computer security requirements. Access priorities shall be established and approved by the operations manager in cooperation with users. Participants, LANL TCO, and YMSCO will identify authorized users. User access activity records shall be maintained in IDCS data storage during the life of the system.

Manual Data Entry: Manual data entry shall be subject to user access restrictions.

Remote Access Restrictions: Remote access to the IDCS shall be subject to user access restrictions. Standard commercial methods of restricting remote connection to the system (i.e., dedicated user phone numbers, dial back modems, time limited connection, user identification via encoded swipe or bar code ID cards, obscured ID card codes) shall be used as needed to prevent unauthorized users from obtaining access to the system or data files. Data files shall be read-only to prevent unauthorized changes to existing data.

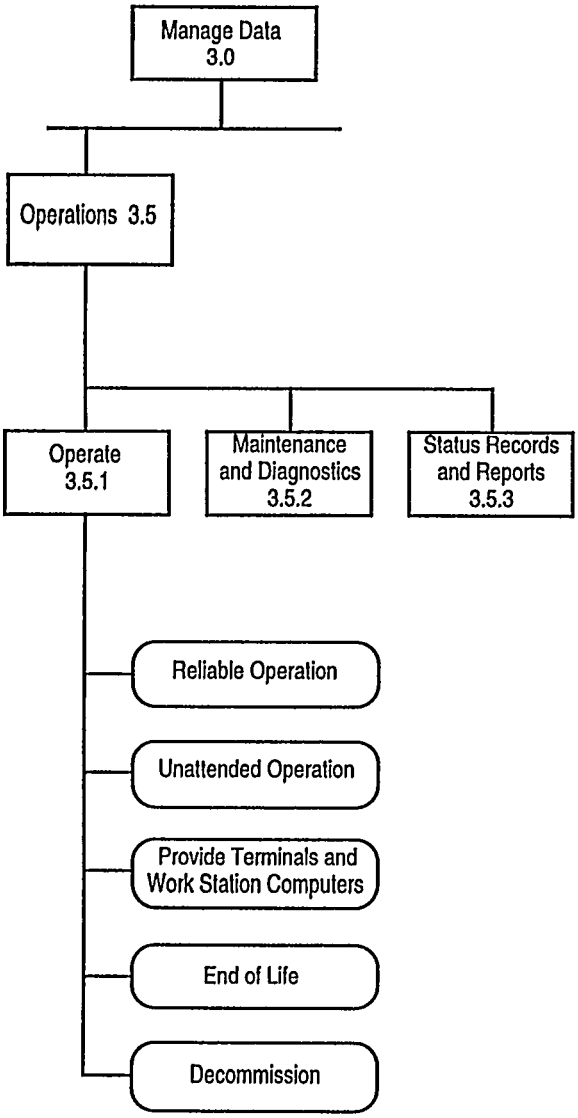


Figure 3.5-1 Operate

3.5 Operations

3.5.1 Operate: Operations procedures shall be developed to optimize system performance including calibration frequency, configuration changes, system performance verification, and other issues related to meeting participant requirements.

Reliable Operation: Operations planning considerations to support testing must address the following issues:

- basic IDCS reliability requirements
- the use of highly reliable components
- time to repair strategies
- preventive maintenance schedules
- redundant subsystems
- the acceptability of lost data
- tests with high data rates (i.e., one sample per minute) have different operational reliability requirements than lower data rate tests (i.e., one sample per day)
- recording data in IDCS data storage or the archive could be delayed for extended periods for any reason with no functional impact if a complete working test data set existed in subsystem (i.e., DAS) storage.

Unattended Operation: The IDCS shall provide for unattended, automatic data collection under normal operating conditions. Abnormal conditions shall initiate an automatic set of procedures to detect, report, and log the abnormal conditions. Where operator intervention or assistance is needed, the IDCS will automatically notify designated personnel. DAS units shall automatically restart and continue taking data after power outages or other similar events that interrupt or stop the DAS.

Provide Terminals and Work Station Computers: Data terminals, workstations, and portable computers shall be provided for participant and IDCS personnel as needed in the computer center and in the ESF. Locations shall be determined by participant and IDCS O&M requirements.

End of Life: The IDCS shall be designed and maintained to meet the data acquisition and data archiving requirements for the entire life of the testing program. Accurate estimates of test time spans are not available at this time. The IDCS may operate for 15 years or longer.

Decommission: When the Project determines the IDCS is no longer needed, all components and wiring will be removed from the ESF.

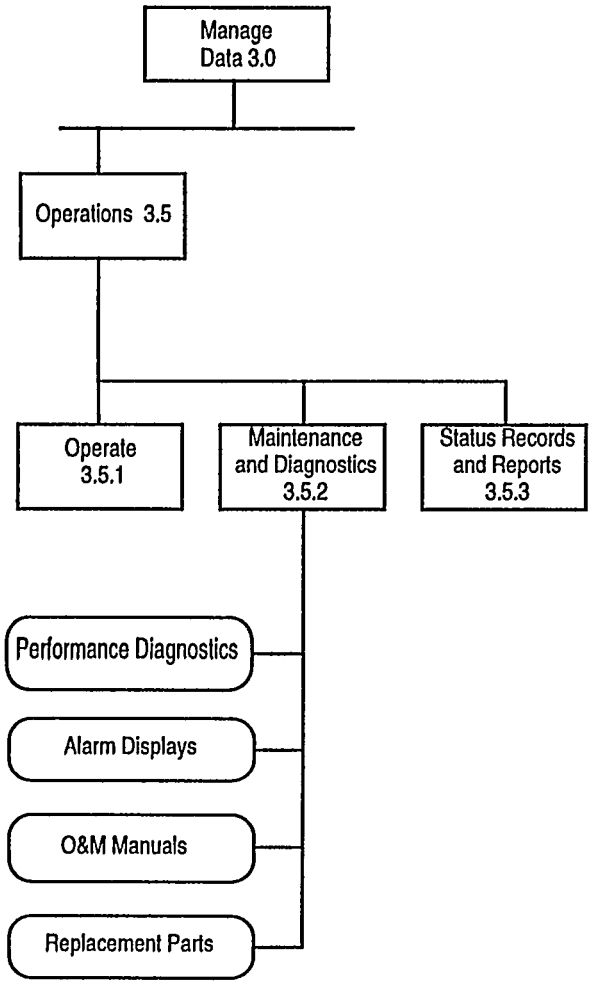


Figure 3.5-2 Maintenance and Diagnostics

3.5.2 Maintenance and Diagnostics

Performance Diagnostics: The IDCS shall monitor signal converter I/O hardware and provide standardized converter input signals to determine converter performance. Processor hardware and software diagnostics shall be run at prescribed intervals as appropriate to verify system performance.

Alarm Displays: The IDCS shall automatically print and provide on-screen malfunction alarm messages at selected terminals and printers. The capability for transmitting alarms to participant sites by modem shall be available as needed. Historical alarm messages shall be available on demand from IDCS data storage.

O&M Manuals: O&M manuals shall be provided for all IDCS equipment during acceptance testing. After final approval, these manuals shall be controlled documents, updated as necessary to provide current information to operators, maintenance personnel, testing teams, and other participants.

Replacement Parts: Maintenance shall include replacement as necessary with next generation equipment having similar functionality. These equipment changes shall not impact on-going data acquisition activities.

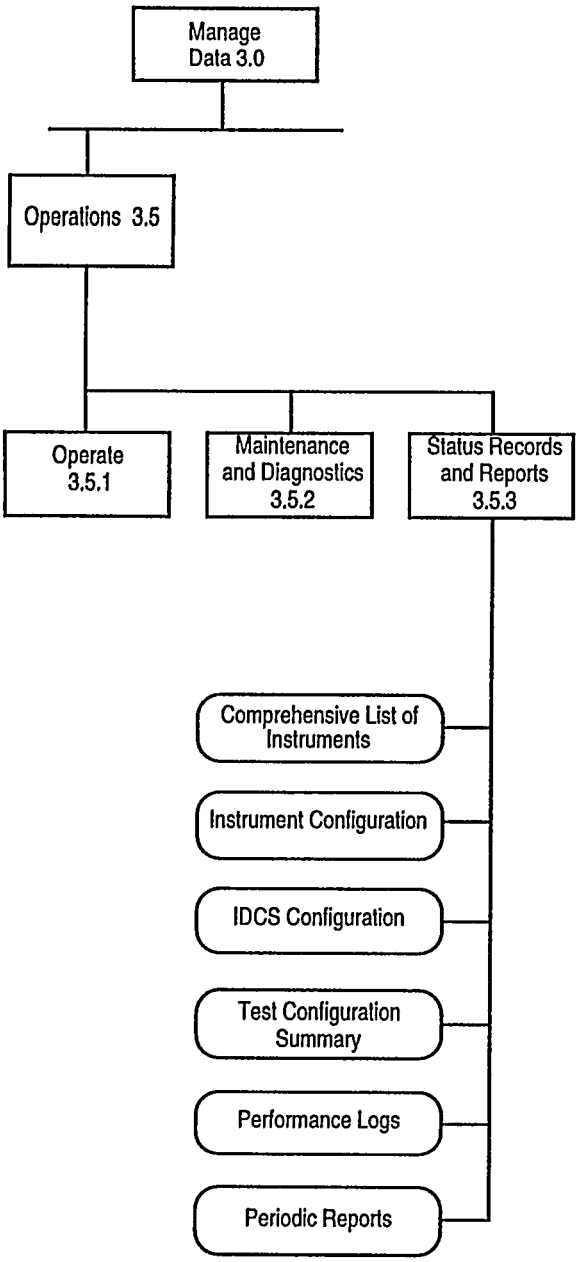


Figure 3.5-3 Status Records and Reports

3.5.3 Status Records and Reports

Comprehensive List of Instruments: The IDCS shall maintain a current and historical record, by part number and serial number or unique identifier, of all instruments monitored by the IDCS. Identical requirements apply to calibration checks, checkout tests, installation and acceptance tests, and operational tests. All test instruments shall be cross-referenced to applicable test activities.

Instrument Configuration: Changes to test instrument configuration (including test identification, status, start and stop times, instrument and equipment lists, relocation, removal or replacement, instrument scan time, scan rate, calibration history, measurement range, alarm level, and comments) shall be maintained in IDCS records.

IDCS Configuration: The IDCS shall maintain an actively updated listing of all IDCS instrument interfaces and system components, system status, location, removal or replacement details, calibration, input channel assignments, measurement range, wiring information, external interconnections, and operating software versions.

Test Configuration Summary: Provision shall be made for on-demand reports of current IDCS test configuration information including identification of actively monitored and inactive tests, test start and stop date and time, number of IDCS channels associated with the test, IDCS channel description, sample rate for each channel, and instrument type associated with each channel. This summary report will contain sufficient configuration information to enable the user to continue to search for additional test configuration information in IDCS data storage. This report shall be available in printed form, on-screen at the site, and by modem connection to remote users.

Performance Logs: Malfunction occurrences and all system diagnostic analysis results shall be entered into system performance logs. Information shall be identified by time, date, performance parameter, and data value.

Periodic Reports: Each month, the IDCS shall prepare an administrative report summarizing IDCS operation. This report shall include calibration, maintenance, configuration, and status information and be distributed to the IDCS archive, the IDCS Data Manager, LANL TCO, and requesters.

4.0 CONFORMANCE VERIFICATION

4.1 Verification of Requirements

Verification of IDCS design and operation for conformance with functional and detailed performance requirements will be performed in parallel with design and installation activities. Organizational IDCS responsibilities are detailed in the Responsibility Matrix shown in Section 4.2 below.

4.2 IDCS Organizational Responsibility Matrix

ACTIVITY	ORGANIZATIONAL RESPONSIBILITY					
	M&O	LANL	YMSCO	REECo	O&M	Participants
1. Prepare Test Schedule and Specify IDCS Availability	N	P	I	I	N	I-R
2. Prepare and Update Functional Requirements Document (FRD)	I-R	P	I	N	N	I-R
3. Preparation of Performance Requirements	I	P	I	N	N	I-R
4. Direct M&O-IDCS to Proceed	I-R	I	P-E	N	N	N
5. Prepare and Update Engineering Plan (EP)	P	N	A	N	N	N
6. Prepare and Update Operations and Maintenance(O&M) Plan	I-R	I-R	I-A	N	P-E	I-R
7. Prepare and Update Design Requirements Document (DRD), Design Specifications and Design Studies	P	R	A	N	N	R
8. Prepare Acceptance Test Criteria	P	R-A	N	N	I	R
9. Prepare Acceptance Test Procedures	R-A	R	I-A	P-E	I	R
10. Prepare & Update Implementation Plan (IP)	P	N	A	I-R	I	N
11. Prepare Procurement Specifications	P	I-R	A	I	N	N
12. Procure IDCS Components	I-W-A	I-W	W-A	P-E	N	N
13. Assemble Deliverable Portions of IDCS	W	W	W	E	W	N
14. Conduct Acceptance Tests	W-A	W-A	W-A	E	W-A	W
15. Conduct Configuration Audit	I	I-W	E	I	I-W	N
16. Store and Install System Deliverables	W-A	W	W	E	P	W
17. Conduct Operational Acceptance Tests	W-A	W-A	W-A	E	E	I-W
18. Operate System	I-W	I-W	W	N	E	I-W

Acronyms and Abbreviations

A	approves	N	no action	W	witnesses
E	executes	P	prepares		
I	(provides) input	R	reviews and comments		

5.0 PREPARATION FOR OPERATIONS

5.1 Operational Acceptance Tests

Operational Acceptance Tests of installed IDCS modules, system configurations, and spare parts will be performed prior to the start of testing to verify operation. These tests will be documented by test procedures developed during the design activities. O&M manuals shall be provided for all acceptance testing. The tests will be conducted on a scheduled basis and witnessed by LANL TCO, YMSCO, and O&M personnel. After test acceptance the O&M manuals shall be controlled documents, updated as necessary to provide current information to IDCS operators, maintenance personnel, test participants and others.

5.2 Operation

After the Operational Acceptance Tests are completed on individual modules and related system configurations, the equipment will be turned over to O&M for operation. Spare parts will be moved to controlled storage. Installed equipment will be connected to identified tests according to participant requirements. Operational, maintenance, and repair procedures shall be developed to ensure optimum system operation and performance.

APPENDIX A

Test Identification and Expected DAS Needs

Test Planning Package 91-5 Test Name	Participant	Expected Channels	DAS Needed Permanent DAS	DAS Needed Portable DAS**
1. Percolation	USGS	20-50		1
2. Bulk Permeability	USGS	20-50		1
3. Radial Borehole	USGS	7X(40-100)	7**	
4. Excavation Effects	USGS	2X(200-500)	2-4**	
5. Perched Water	USGS	20-50		1*
6. Hydrologic Properties of Major Faults	USGS	20-50		1*
7. Diffusion	LANL	2X(50-150)		2*
8. Field-Scale Radionuclide Transport	LANL	2X(50-150)	1**	2*
9. Access Convergence	SNL	10X(60-180)	10	1*
10. Demonstration Breakout Room	SNL	2X(150-350)	2**	
11. Sequential Drift Mining	SNL	500-1000	2-4**	
12. Heater Experiment in TSw1	SNL	100-250	1**	
13. Canister-Scale Heater	SNL	150-350	1-2**	
14. Heated Block	SNL	250-500	1-2**	
15. Thermal Stress	SNL	250-500	1-2**	
16. Heated Room	SNL	250-1000	1-4**	
17. Plate Loading	SNL	50-200		1
18 Rock-Mass Strength	SNL	50-200		1
19. Monitoring Ground Support	SNL	10X(60-180)	10	
20. Monitoring Drift Stability	SNL	10X(60-180)	10	1*
21. Air Quality and Ventilation	SNL	20-50		1*
22. Overcore Stress	USGS	20-50		1
23. Geomechanical Attributes	LLNL	2500-4500	8-15**	
24. Near Field Hydrologic Properties	LLNL	2500-4500	8-15**	
25. Near Field Heater Tests	LLNL	3000-9000	8-30	
26. Common Data	M&O	100-400	2	

Notes:

1. * Replace portable DAS with permanent DAS if long term monitoring is required.
2. **DAS can be reused at another location after completion of test.
3. Expected Channel column notation explanation: 2X(20-60) means 2 tests or 2 locations with 20 to 60 channels being monitored for 40 to 120 total channels.

APPENDIX B

Test Identification and Location

Test Planning Package 91-5 Test Name	Participant	ESF Location: Ramps/ Main	ESF Location: N Ramp Extension	ESF Location: After Construction
1. Percolation	USGS		√ *	
2. Bulk Permeability	USGS			√ *
3. Radial Borehole	USGS	√	√	√
4. Excavation Effects	USGS		√	
5. Perched Water	USGS	√ *	√ *	
6. Hydrologic Properties of Major Faults	USGS	√ **	√ **	√ **
7. Diffusion	LANL			√ *
8. Field-Scale Radionuclide Transport	LANL			√ *
9. Access Convergence	SNL	√	√	√
10. Demonstration Breakout Room	SNL			√
11. Sequential Drift Mining	SNL			√
12. Heater Experiment in TSw1	SNL			√
13. Canister-Scale Heater	SNL			√
14. Heated Block	SNL			√
15. Thermal Stress	SNL			√
16. Heated Room	SNL			√
17. Plate Loading	SNL			√ *
18. Rock-Mass Strength	SNL			√ *
19. Monitoring Ground Support	SNL	√	√	√
20. Monitoring Drift Stability	SNL	√	√	√
21. Air Quality and Ventilation	SNL	√	√	√
22. Overcore Stress	USGS	√ *		
23. Geomechanical Attributes	LLNL			√
24. Near Field Hydrologic Properties	LLNL			√
25. Near Field Heater Tests	LLNL		√	√
26. Common Data	M&O	√	√	√

Notes:

1. *Short duration and/or limited number of data channels using temporary, portable IDCS DAS.
2. ** Replace portable DAS with permanent DAS if long term monitoring is required.

APPENDIX C

Projected Test Data Rates

Summary

A tentative estimate of test data rates and data storage requirements through FY97 has been developed to aid in identifying system components for test data acquisition support. The results are summarized below:

1. Average network data rates are very low, allowing the use of economical, established technologies. The basic network should not need changes or upgrades for the life of the Project.

2. The proposed IDCS modular design minimizes the need for contingencies in these estimates and they have not been included in these estimates. This modularity implies meeting increasing data rate requirements with modular expansion *when required.* Data storage requirements will change with variations in excavation strategies and refinement of the testing program. These changes may increase or decrease storage requirements. Contingencies only increase system capacity leading to probable over-estimates. IDCS performance requirements will be known far enough in advance (based on construction and testing schedules) to procure and install more modular expansion capacity as requirements are identified.

3. Facility Monitoring and Control System (FM&CS) data are not included in this estimate. Currently identified FM&CS rates are much higher than test data rates during construction. FM&CS rates are expected to drop at the end of construction. In spite of the large amount of FM&CS data, average network data rates are so low that even this large increase in data transferred, compared to the smaller amounts of test data, should not impact network performance.

4. Estimates of long term data storage capacity for testing data through FY97 of 5 MBytes/day imply a modest IDCS computer system. If FM&CS data rates were similar to Construction Monitoring Test data rates (≈2,000 data measurements/day average over 3 years), they would have little impact on an IDCS designed to transfer and store test data only.

5. IDCS test data acquisition performance must not be impacted by FM&CS data collection activities.

6. Estimates of average lifetime data rate requirements (e.g., Megabytes/day or year) are not used in these estimates. The "lifetime" concept is misleading since after the peak testing period (3-5 years into the testing program) test data generation (and presumably excavation-related data) should decrease abruptly. Data rates will then continue to decrease until IDCS "end-of-life" by instrument attrition or planned demobilization of testing activities. In any case, storage-per-day requirements averaged over the period of interest could be quite small if averaged over a long but low activity life and consequently estimates of lifetime data rates are not useful or necessary. A careful consideration of storage requirements versus time is needed to estimate the peak storage requirement.

Assumptions for This Estimate

General Assumptions: Data rates for U.S. Geological Survey (USGS) radial borehole tests (RBT) and the Sandia National Laboratories (SNL) Construction Monitoring (CM) Test were derived from participant documents. Data rates that were used for Thermal Tests are extrapolations from identified tests. The Thermal Tests are included to evaluate the effect of a large test on network rates and data storage capacity and not meant to accurately portray testing schedules or requirements. Aggressive testing schedules were assumed to accommodate possible changes in test planning. The values presented are base values. No factors or contingencies were applied to the calculated data rates. Deferred and short term tests were not included in this analysis. Short term tests are generally small and have little effect on test data rates. The remaining deferred tests will generate limited data; small compared to tests included in this analysis, and may be scheduled after a major data producing test such as CM has ended, further decreasing their impact on data rates.

Calculation Assumptions:

1. All network data packets are sized at 128 bytes/packet containing 64 bytes of packet overhead and 64 bytes of data.
2. All data is transferred and stored in ASCII format.
3. A single data value from testing activities occupies 32 bytes including acquisition time and date, instrument ID, and data.
4. An IDCS "point" is a single input instrument channel (analog value) or single digital data port.

Calculating Data Rates

Calculations, including the output from a fully implemented test (e.g., USGS RBT) or installation phase test (e.g., SNL CM and the Thermal Test), for a completed test installation are included here. Startup activities that might generate higher or lower average rates have not been considered. This estimate is too general to attempt to develop peak data rates based on scheduled test installation, startup, and shutdown.

USGS: RBT primary data will be will be generated during water potential calculations from thermocouple psychrometer (TP) measurements. USGS data acquisition equipment will make the TP measurements and perform calculations generating data to be transferred to the IDCS. Data monitoring assumptions for water potential measurements are summarized below:

- One water potential measurement/day at each TP sensor
- Four TP sensors/borehole and three boreholes/test location
- Each TP measurement generates 40-80 calculated data values
- A nominal 60 data values/measurement will be used in the calculation of data rates
- USGS data is transferred as a file with embedded formatting, 16-bytes/value
- Five RBTs will be installed and monitored

For each RBT:

Bytes/day = (1 measurement/day)*(4 TPs/borehole*3 boreholes/measurement)*
(60 values*16 bytes/value)*(2 packet bytes/data byte)
= 23,040 bytes/day

SNL: CM monitoring instrument stations are planned to be located serially along the North and South Ramps, Main Ramp, and North Ramp Extension at approximately 150 m (492 ft) intervals. Instruments will be distributed over the area serviced by each instrument station. Several instrument stations will be wired to a common DAS. Data monitoring assumptions for these measurements are summarized below:

- 11 CM data acquisition stations (DAS) will be deployed to service the ESF
- 200 data channels (points)/DAS
- Normal monitoring rate will be 1-measurement/day for 90% of the time
- Abnormal monitoring rate will be 1-measurement/hour for 10% of the time
- Test installation starts during FY94Q4 (Fiscal Year 1994, Fourth Quarter)

For each CM DAS:

Bytes/day = ((1 measurement/day*0.9 fraction of the day for normal operation)+
(3 measurements/day *0.1 fraction of the day for abnormal operation))*
(200 points/DAS)*(32 bytes/point)*(2 packet bytes/data byte)
= 15,360 bytes/DAS/day

Thermal Tests: Evaluating the impact of the major heated tests will be representative of large test data rates. Other testing activities not identified will be smaller than the uncertainty of the projection. Data monitoring assumptions for Thermal Test measurements are summarized below:

- 2 thermomechanical tests
- Combined tests use 10,000 data channels (points)
- Normal monitoring rate will be 1-measurement/day for 90% of the time
- Abnormal monitoring rate will be 1-measurement/hour for 10% of the time
- Test installation starts during FY96Q4 and takes 1 year to install

For the combined tests in full operation at the end of the 1-year installation period:

Bytes/day = ((1 measurement/day*0.9 fraction of the day for normal operation)+
(3 measurements/day *0.1 fraction of the day for abnormal operation))*
(10,000 points)*(32 bytes/point)*(2 packet bytes/data byte)
= 768,000 bytes/day (max rate at the end of installation)

Projecting IDCS Data Rates: The above rates have been used to estimate data rates through October 1997 for USGS RBTs, SNL CM, and Thermal Tests shown in the following charts. Preliminary IDCS schedules indicate that the system will be ready for data acquisition as early as February 1995. This schedule causes rates for FY94Q4 and FY95Q1 to be zero.

Projecting data rates for other tests using IDCS is beyond the scope of this estimate. Due to the tentative nature of the data acquisition estimates included here, no contingencies or peak data rates are included. Tests do not run indefinitely. All tests have a projected lifetime. The number of concurrent channels being monitored will depend on the testing schedules in place at the time. It is expected that as many as 10,000-12,000 channels could be on-line concurrently, however this assumes that several major tests will be implemented early in the testing cycle.

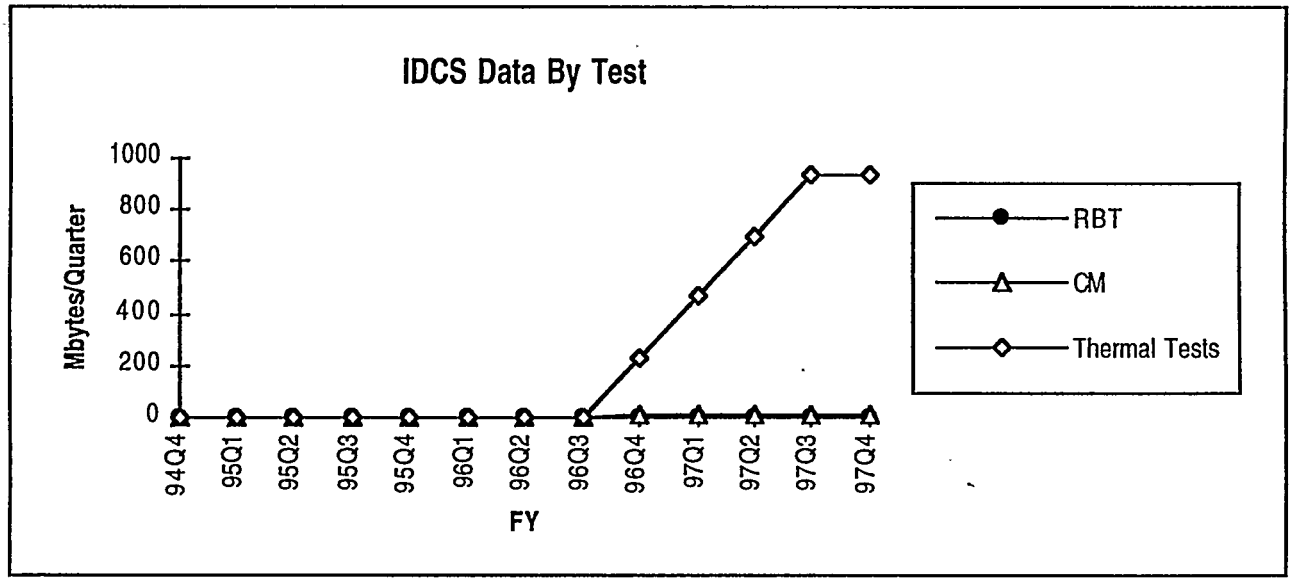
The attached charts summarize the estimates developed above as follows:

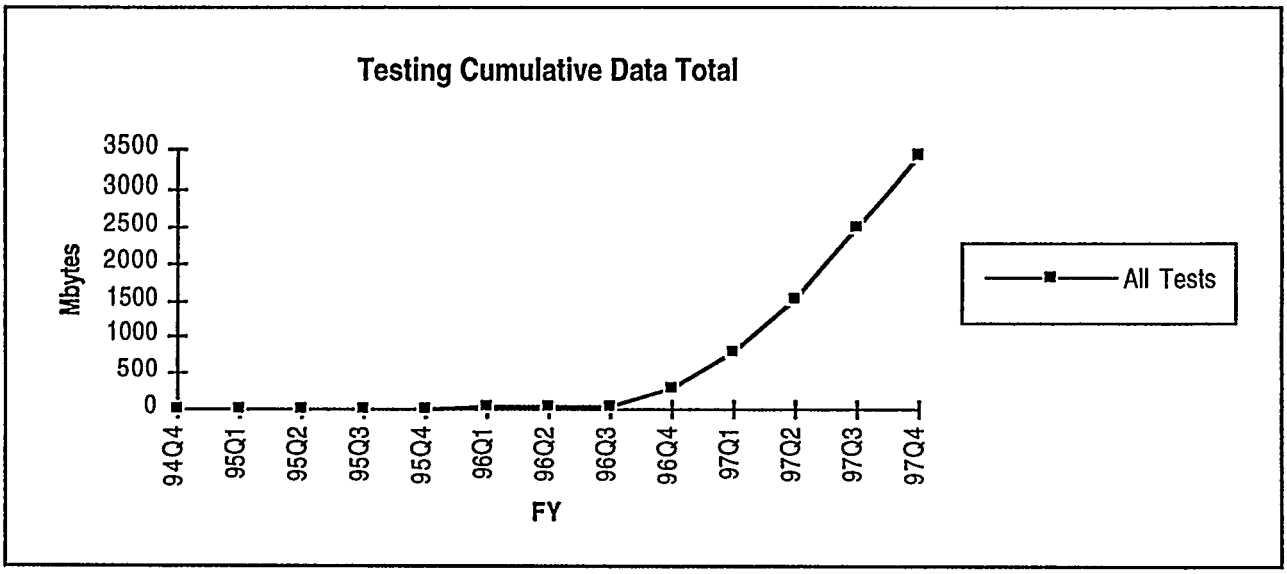
IDCS Data by Test: A number of new data acquisition sources are brought on-line during each fiscal year. The relative activity of three tests and cumulative data acquisition during each quarter for fiscal years FY94-FY97 is shown. For example, during FY94Q4 and FY95Q1 no data is acquired by IDCS. During FY95Q2 testing produces 5 MBytes, and during FY95Q3 testing produces 7 MBytes.

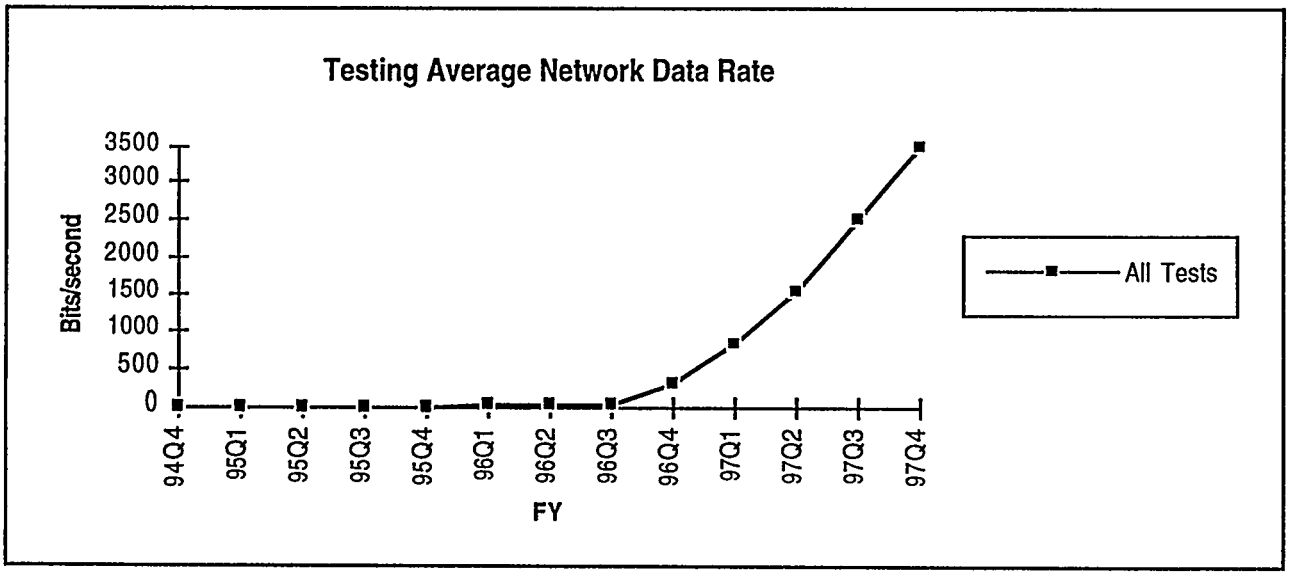
IDCS Cumulative Data Total: This figure shows the result of adding each successive quarters data shown above to the preceding months total. For example, during FY94Q4 and FY95Q1 no data is acquired by IDCS and the cumulative total through FY95Q1 is 0 MBytes. During FY95Q2 testing produces 5 MBytes of data, and the cumulative total increases to 5 MBytes. During FY95Q3 testing produces an additional 7 MBytes of data which, when added to the previous periods total, results in 12 MBytes total accumulation through FY95Q3.

IDCS Average Network Data Rate: The average data rate is arrived at by dividing the *IDCS Data by Test* quarterly value (converted to bits) by the number of seconds per quarter.

Estimate Results







APPENDIX D

IDCS Test Data Manager Functions

The IDCS Test Data Manager shall be responsible for all test data distribution from the IDCS to Project participants. Scheduled data distribution based on participant requirements will be supplemented by on-demand distribution at the request of participants for their own data and YMSCO for their internal use or redistribution to others.

Information flowing from IDCS inputs (IDCS monitored tests, participant data acquisition, manual data entry, IDCS and instrument calibration and configuration files, IDCS self monitored data, and IDCS event logs) into IDCS data storage and subsequent data distribution from data storage to PI test databases, and from the PI test record center to DOE is shown in Figure 1. IDCS design and management issues impacting data flow from tests to DOE are summarized as follows:

1. The participant generating data collected by IDCS is responsible for the data. IDCS is analogous to a contract data acquisition service for each participant. Participants delegate the IDCS responsibility to collect their data and IDCS in return guarantees to do this job using responsible, controlled processes, to keep each participant's data secure and separate from other participants, maintain a secure back-up record, and finally, the IDCS Data Manager delivers data to the participant that is a verifiable copy of data processed and stored by IDCS. The IDCS does not represent PI interests in any way except to collect, store, and distribute data.

2. Normal ADP security and access measures will be used to verify controlled access to the IDCS including participant test personnel, IDCS O&M personnel, and others. Access to on-line test data stored on IDCS will be read only. Participants will not be able to access other participant organization data in IDCS data storage. All data entered into the IDCS will be saved. No data will be overwritten before inclusion in the IDCS archive. All data files created on IDCS will be part of a back-up data set and the IDCS archive. A certain subset of current IDCS data (this subset may include all data) will be available on-line for participant access.

3. IDCS data management will be structured to regularly submit each participant's data to that participant's record center designated for receiving test data. The IDCS Data Manager will submit data to others at the direction of DOE (see items 7 and 8). There shall be a standard IDCS data transfer format and media. Options to meet specific data transfer requirements are available for the physical media and data formats. Replacement or duplicate distribution data sets are available on request. All archived data is available for use in creating special data sets as requested by participants (data available to participants is identified by access privileges for that time period) or DOE (access to data from all participants for all time periods).

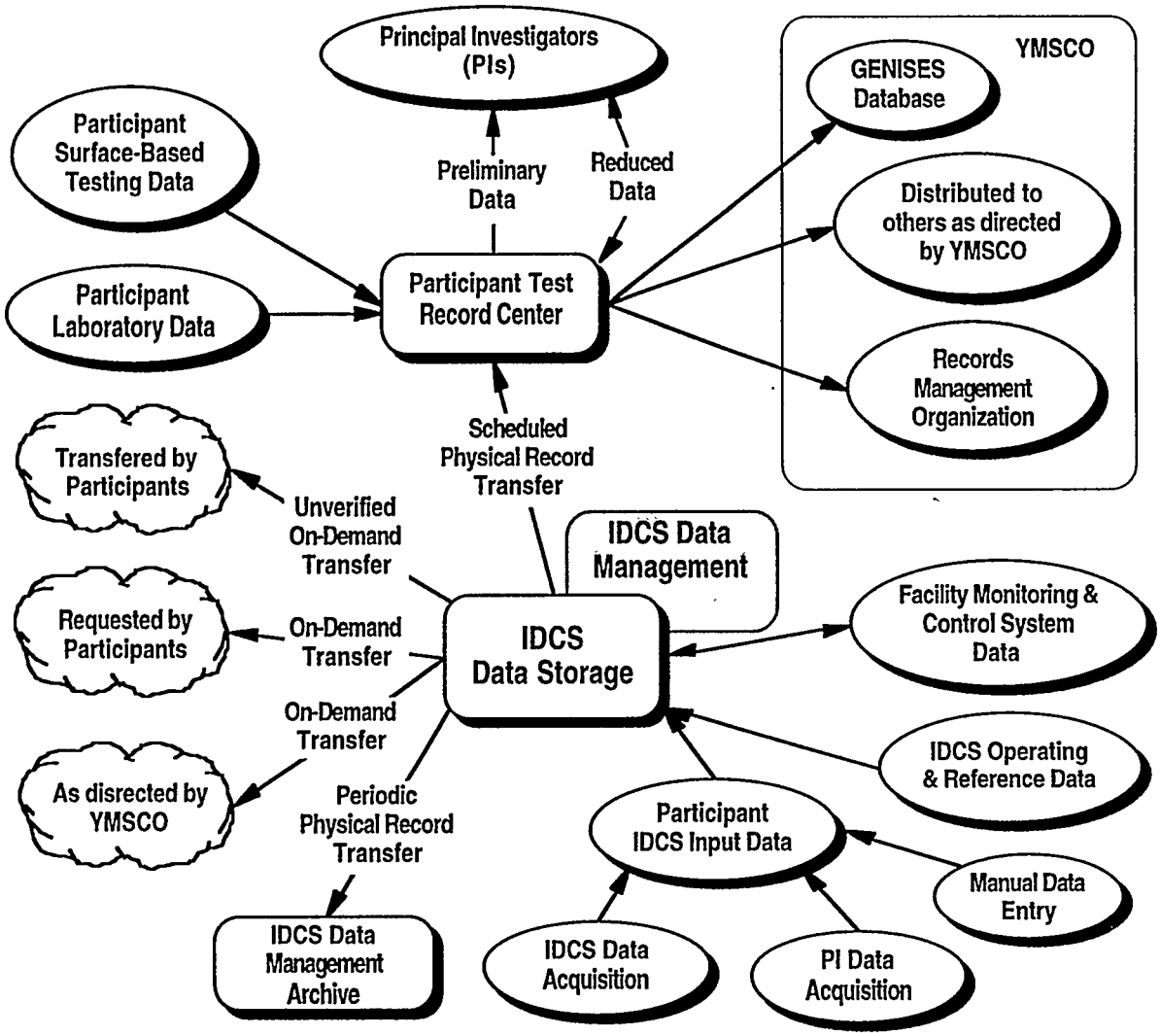


Fig 1 ESF IDCS Information Flow - A Data Management Overview

4. Participants wishing to share data can send the shared data directly from their own records center to the requester. Common data from the IDCS and excavation operations will be available for distribution to all participants on request to the IDCS Data Manager.

5. Each participant's data is accessible on demand, as determined by access controls, in the ESF and at the surface in the IDCS computer center. IDCS Data Management regards these transfers as uncontrolled (no QA verification of the process) and this data should not be used for site characterization analysis unless the data sets are verified against controlled data transferred from IDCS to the participant's test records center.

6. IDCS data transfers to a participant's test records center will be one of several data sources feeding this records center. All of these data sources, including IDCS data, will be reported to the DOE by participants using processes defined by current Project data management procedures. Current IDCS data management plans do not include periodic transfers of participant data to DOE records centers. DOE requests for special data transfers would need to include specific data required and instructions on the mode of transfer and tracking procedures to be followed by the IDCS Data Manager.

7. Evaluation and inspection of test data transferred from the IDCS data storage to the participants records center is the PI's responsibility. IDCS data verification will verify internal IDCS data processing only. The development, reporting, and distribution of technical data sets, verified and validated to participant test requirements, procedures, and controls, will be accomplished by participant PIs.

8. The participant distributes technical data to DOE records centers, databases, and others as directed by DOE under controls implemented by participant's QA program in conformance with DOE data management procedures. IDCS plays no functional role in this process.

9. IDCS Data Management will be part of the LANL ESF TCO test planning and field support activities. Summaries of IDCS data monitoring (not the actual data) are planned to be included in TCO periodic reporting to DOE and participants. These administrative reports will include notes on IDCS activities and events (i.e., test data acquisition started or stopped, kinds of data being monitored, and other related information) for the reporting period. This will allow DOE and participants to regularly review overall ESF data acquisition activities and identify possible data of interest to them. The IDCS will also include catalogs and data storage search capabilities that will support identifying data (source only - not the actual data), equipment configurations, and specific operational details from all IDCS monitored tests as another method of identifying data of interest.

IDCS information transfer is illustrated in Figure 2. Information transfer into and out of the IDCS data storage shall be defined by the IDCS Data Management Plan (IDCS DMP). Subsequent distribution of data sets beyond the scope of the IDCS DMP shall be the responsibility of others and be controlled by the responsible organization's applicable data transfer controls and procedures.

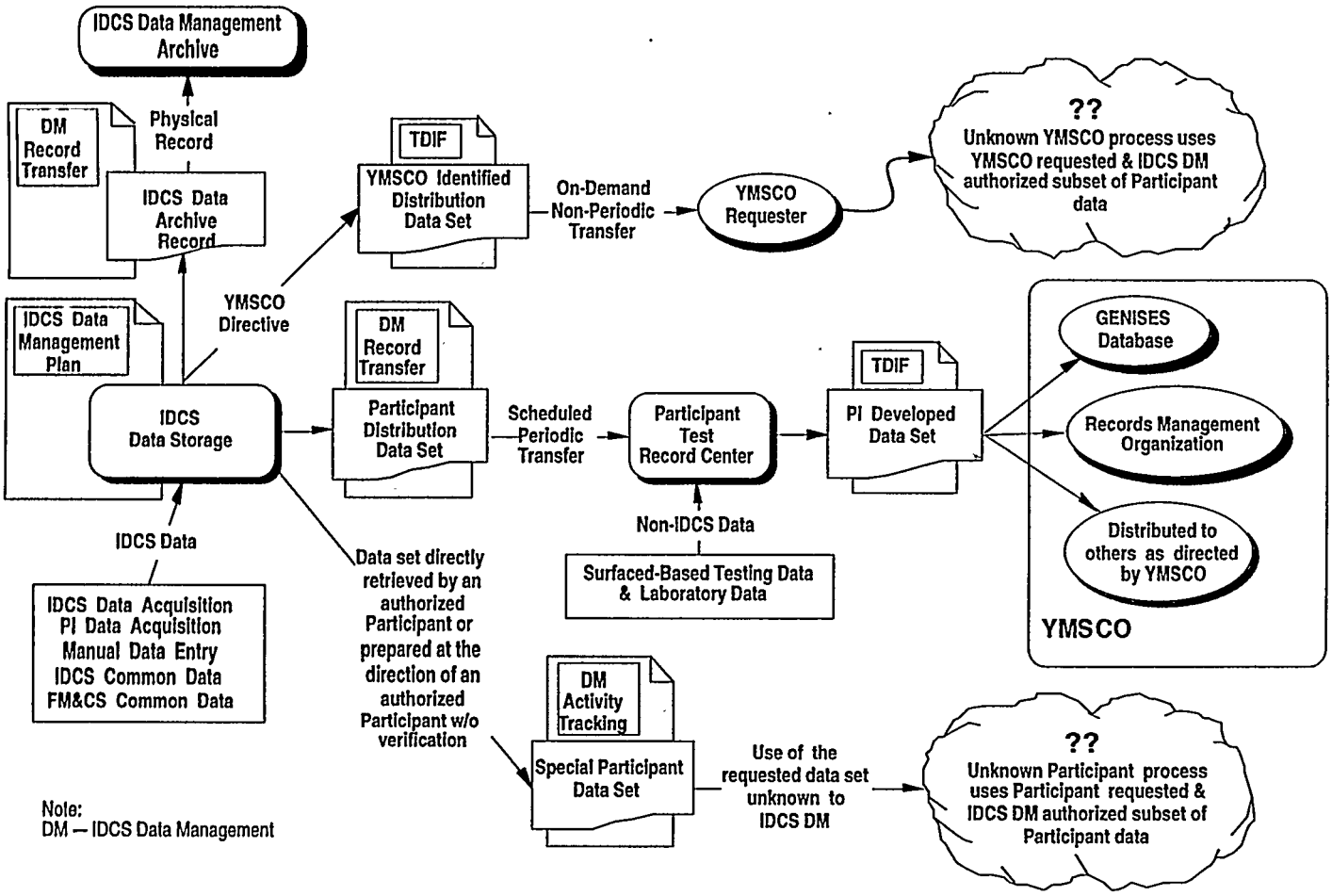


Fig 2 IDCS Information Transfer - An IDCS Data Management Overview

APPENDIX E

Bibliography and References

Documented sources of IDS requirements are being developed as the testing program progresses. The following sources were used to develop the FRD.

1. *EG&G, Inc.*, Integrated Data System Title I Preliminary Design, Revision 0, Document IDS-1011-007-00, March 2, 1988.

2. *Los Alamos National Laboratory*, Test Planning Package 91-5, Preliminary Test Planning Package for Support of Pre-Title II Design Studies, dated September, 1991.

3. *Sandia National Laboratories*, Letter, L. Costin to H. Kalia, "Plans for Starter Tunnel Data Acquisition System for SNL Design Verification Study (Study Plan 8.3.1.15.1.8), dated July 13, 1993.

4. *Sandia National Laboratories*, Letter, L. Shephard to N. Elkins, "Planning Information for In Situ Design Verification and Excavation Investigation Activities in the ESF North Ramp", dated March 31, 1994.

5. *US Department of Energy*, Exploratory Studies Facility Design Requirements Document, YMP/CM-0019, Rev 0.

6. *US Department of Energy*, Quality Assurance Requirements and Description, DOE/RW-0333P, Rev 1.

7. *US Department of Energy*, Site Design and Test Requirements Document, YMP/CM-0021, Rev 0.

8. *US Department of Energy*, Study Plans. YMP study plans are a limited source of IDS requirements, which are provided directly from the participant testing organizations.

9. *US Department of Energy*, letter from C. P. Gertz (DOE) to R. J. Herbst (LANL), *Integrated Data System (IDS) Title II Design Implementation*, dated April 14, 1989, with enclosure *Action Plan For Implementation of the Integrated Data System (IDS) Title II Design*

10. *US Department of Energy*, Yucca Mountain Project Technical Assessment Review of the Integrated Data System Title I Preliminary Design Review Record Memorandum, February 24, 1989.

11. *US Geological Survey*, Memorandum, F. Thamir to F. Homuth, "Follow-up on the IDS Design Features Meeting held on 22 July, 1993", dated September 28, 1993.

APPENDIX F

Acronyms and Abbreviations

ADP	Automatic Data Processing
ASCII	American Standard Code for Information Interchange
CM	Construction Monitoring
DAS	Data Acquisition Station
DM	Data Management
DMP	Data Management Plan
DOE	US Department of Energy
ESF	Exploratory Studies Facility
ESFDR	Exploratory Studies Facility Design Requirements
FM&CS	Facility Monitoring and Control System
FRD	Functional Requirements Document
GENISES	Geographic Nodal Information and Scientific Evaluation System
IDCS	Integrated Data and Control System
I/O	Input/Output
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MBytes	Megabytes
M&O	CRWMS Management and Operating Contractor
NIST	National Institute of Standards and Technology
O&M	Operations and Maintenance
PI	Principal Investigator
QA	Quality Assurance
QARD	Quality Assurance Requirements and Description
RBT	Radial Borehole Tests
RSN	Raytheon Services Nevada
SD&TRD	Site Design and Test Requirements Document
SNL	Sandia National Laboratories
TAR	Technical Assessment Review
TCO	Test Coordination Office
TDIF	Technical Data Information Form
TP	Thermocouple Psychrometer
USGS	U.S. Geological Survey
YMP	Yucca Mountain Site Characterization Project
YMSCO	Yucca Mountain Site Characterization Office

APPENDIX G

DOE Action Plan Reference Matrix and Integrated Data System (IDS) Technical Assessment Review (TAR) Notes

IDS functional requirements identified in the DOE letter from C. P. Gertz (DOE) to R. J. Herbst (LANL), *Integrated Data System (IDS) Title II Design Implementation*, dated April 14, 1989, with enclosure *Action Plan For Implementation of the Integrated Data System (IDS) Title II Design* have been addressed in this document and specific references are included in the reference matrix shown below:

Item	DOE Action Plan Issues and Description		FRD Rev 3.0 Reference
1.	Pg. 1, Para. 1	TAR Comment Resolution	Appendix E, Item 1. Appendix G, TAR Notes 1. and 2.
2.	Pg. 1,.Item 2.A.	Functional Requirements	Section 1.2
3.	Pg. 1, Item 2.C.	Performance Criteria Operational Life Duration of Data Storage	 Section 1.5.5, Operations, bullet 2 Section 3.6.1 Section 3.4.1
4.	Pg. 1, Item 2.D.	Standard measurement references traceable to NBS	Section 3.3.2
5.	Pg. 2, Item 2.E.	DOE Orders	Section 2.0
6.	Pg. 2, Item 3.B.	LANL supplies design information to IDS contractor	Section 1.3 Section 1.4 Section 1.5.3 Section 4.2

Technical Assessment Review Notes:

1. Outstanding unresolved TAR comments mainly address detailed EG&G Title I IDS design issues. The EGG Title I design has been superseded with later detailed designs by RSN and the M&O. These new designs have resolved these design issues. The remaining outstanding comments are as follows:

   TAR comments 25, 27, 28, 29, 30, 34, 35, 48, 49, 50, and 54 apply from Appendix E, reference 8. These comments identify problems with the given accuracy and resolution, and note insufficient specification of other information. TAR comment resolution comments acknowledge these problems, and commit to providing complete and correct information in support of later design effort.

2. These TAR comments will not be addressed in the FRD since detailed design requirements are not part of this document. These issues will be addressed when design specifications are prepared by the participants and transferred to the M&O through the LANL TCO as detailed design requirements supporting specific ESF tests.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Meeting Report

Consolidated Sampling Database System
Close-Out Meeting

CAG: 919424201
Tue, Aug 30, 1994

Location: LANL Conference Room #1

Date & Time: Mon, Aug 29, 1994, 2:00 - 3:30PM

Attendees: D Boak, K Degner, N Elkins, G Hall, J Hall, F Homuth, A Mitchell, R Oliver.

Attachment: Consolidated Sampling Database System Meeting Agenda

Distribution:

D Boak,	LANL,	EES-13/LV,	MS 527
J Canepa,	LANL,	EES-13,	MS J521
K Degner,	LANL,	EES-13/LV,	MS 527
N Elkins,	LANL,	EES-13/LV,	MS 527
G Hall,	CAG,	Carlton, OR	
J Hall,	CAG,	Carlton, OR	
F Homuth,	LANL,	EES-13/LV,	MS 527
H Kalia,	LANL,	EES-13/LV,	MS 527
A Mitchell,	LANL,	EES-13/LV,	MS 527
R Oliver,	LANL,	EES-13/LV,	MS 527
EES-13/LV,	LANL,	MS 527	
CAG Files,	Carlton, OR		

Summary:

The consensus of the meeting was that the application development process was very successful. The development team (D Boak, K Degner, G Hall, and A Mitchell) worked very well together and each member was instrumental in supporting a very quick development cycle leading to the delivered product. Only minor bugs have been discovered (and corrected) to date. The application is a well tested (in the office) late beta version. Field testing by the mappers is the next step in the development process with modifications as needed.

Meeting Details:

Discussion generally followed agenda items (see attachment) and is reported in that way below:

1. CAG – Brief Overview of the Task Goals and Results to This Point

   Development Summary: This task was a "rapid prototyping" process proceeded by a requirements analysis and conceptual modeling effort. The project initially defined in March/April, 1994 was an administrative database system for the TCO. The objectives of this system were centered around supporting reporting facilities for consolidated sampling activities. As the requirements analysis and conceptual modeling activity proceeded, an

organizational view (TCO) of the system was formed including functional modularization from which the idea for a "mapper module" emerged. The system development project was then focused in on the mapper module which was subsequently completed and delivered July/August, 1994. The following development history details development activities.

Development History:

March 24, 1994
Initial Discussions
- First meeting with D Boak regarding idea of developing a sample tracking database system in FileMaker Pro.
- Focus upon supporting TCO report generation for internal use and for PIs.
- D Boak presents a preliminary conceptual data model for system and working reports.

Action: Develop FileMaker files derived from preliminary data model and reports.

April 15, 1994
TCO Requirements Definition
- R Oliver's ESF/TCO Test Plan Sequence Planning Table is introduced.
- Additional working reports are presented by D Boak.
- Specific information is elicited regarding TPP, JP, WBS, WP, SP, etc. files.
- FileMaker file system for maintaining sample collection and peripheral data is under development.

Action: Continue development of TCO file system for sample tracking in FileMaker.
Develop R Oliver's ESF/TCO Test Plan Sequence Planning Table in FileMaker.

May 5, 1994
TCO Requirements Definition
- Introduction of large administrative files (FAX log, document lists, TWS numbers) by R Oliver for integration into development FileMaker file system.
- Discussion regarding suitability of FileMaker for this project.
- High level meeting regarding data elements to be included in TCO sample tracking system, the grouping of those elements into files, and the relationships (links) needed between the files.
- R Oliver's ESF/TCO Test Plan Sequence Planning Table in FileMaker is completed.

Action: Continue file system development and FileMaker layout designs for data entry.
Develop main navigation facility for movement between files.
Implement "links" between files.

May 13, 1994
TCO Conceptual Model/Mapper Module Introduction
- Initial meeting with A Mitchell regarding his involvement in sample collection system development project.
- Discussed with D Boak the possibility of developing a system for the use by the mappers on the mapping gantry behind the TBM for sample collection data capture.

Action: Develop high level graphical description of system files.
Continue layout development for data entry.

May 16, 1994
TCO Conceptual Model/Mapper Module Requirements Definition
- Presented graphical description of system files (this is still the TCO view, mapper integration and the extent of a mapper system is still in initial discussion).

- R Oliver expresses concern regarding continued development efforts in FileMaker. His preference is Microsoft Access.
- R Oliver provides additional conceptual input regarding system file structure and the hierarchies existing between organizational documents.
- Continued brainstorming and definition discussions of a mapper module.

Action: Integration of new information from R Oliver into FileMaker file structure.
Automate peripheral file updates (when parent or "linked" file is modified).

May 27, 1994
Mapper Module Requirements Definition
- Introduction of S Beason (USGS) to idea of mapper system module.
- Discussions regarding system requirements for mapper module become more focused.
- The mapper module development effort is identified as a critical activity in the overall system development process.

Action: Begin development of the mapper module file structure and user interface.

June 7, 1994
Mapper Module Requirements Definition & Initial Application Development
- Discussion of security levels for different mapper users.
- Discussion of operational details specific to mapper activity. USGS input is needed.
- Hardware requirements discussed.

Action: Continue mapper module development effort.

June 14, 1994
Process Model Overall System/Mapper Reporting Requirements
- Presentation of current mapper module version.
- Change requests; response to USGS requirements.
- Development of new TCO data entry layouts.

Action: Continue mapper module development effort.

July 6, 1994
Advanced Mapper Module Development: Respond to change requests coming from USGS.

July 11, 1994
Advanced Mapper Module Development
- Hardware issues continue to go unresolved.
- Geologic and thermomechanical unit representations are unresolved. Waiting on USGS input.
- Reporting requirements modified to include new transfer of custody form.
- Respond to change requests.
- Resolving the specific content of a number of menus in system.

Action: Continue mapper module development effort.

July 13, 1994
Advanced Mapper Module Development
- Hardware issues continue to go unresolved.
- Geologic and thermomechanical unit representations are unresolved. Waiting on USGS input.

Action: Respond to change and repair requests.
Continue mapper module development effort.

July 18-August 5, 1994
Advanced Mapper Module Development
- Geologic and thermomechanical unit representations are resolved.
- Changes requests implemented.
- User documentation prepared.
- Debugging.
- Import/export facilities completed.

Action: Final beta version delivered.

2. CAG – The Designer's Observations on Strengths and Weaknesses of the Application

Strengths: FileMaker provides relatively easy maintenance.

Weaknesses:
- Application performance will slow down as large files increase in size.
- Because application is currently implemented in "interactive" FileMaker, there is a risk of end-users modifying and damaging the application. Alternatives for correcting this condition include implementing the application in "runtime" FileMaker or re-implementing FileMaker built-in user level file protection.

3. CAG – Identify Items Missing From the Current Delivery Package

Design documentation has not been prepared for the application. This documentation will be important for supporting successful and timely modification of the application in the future. It will also play a key role in assisting system administrators in maintenance and debugging.

TCO reporting facilities were not completed before delivery. While the main user interface for generating TCO reports has been built, the reports themselves have not been built into the system. K Degner is now working on these reports.

4. LANL – The User's Observations on Strengths and Weaknesses of the Application

Strengths:
- FileMaker is easy to learn and very versitile providing relatively easy maintenance (K Degner, D Boak).
- Application provides platform portability between Mac & PC (D Boak).
- Application is a stable beta version that conforms to currently known user requirements (D Boak, A Mitchell, K Degner).

Weaknesses:
- Application is yet untested in the field (D Boak, A Mitchell, K Degner).
- The application will slow down as the files being sorted get larger. This is a problem with most desktop computer based databases. The most important issues to maximize this applications speed of response to user commands are as follows:

    1. A very fast computer (faster works better with no upper limit).
    2. Fast hard disk access time (<12 ms).

3. purging unnecessary data from the sample data file. This is most easily accomplished by purging all data older than an established active period (e.g., 2 months).Older data would be maintained in backups on the mapping platform, the TCO, and other locations as needed.

5. LANL – Identify Items Missing From the Current Delivery Package

TCO reporting is now being added to the application by K Degner. These reports are expected to be completed following TBM startup.

6. ALL A List of Improvements That Would Enhance the Application

SMF Module module development was discussed early on in the requirements analysis phase of this project. Integration of the SMF into the database system is still seen as a logical and strategic next step in enhancing the current system.

TCO Reporting facilities completion has been identified as the highest priority enhancement. In order for the TCO to benefit from the system, it must be able to produce a number of defined reports from database sample criteria and collection data.

Features added to enhance reporting or support new user requirements include the following items:

- label layout had to be reoriented to match the label stock purchased
- added collector's signatures to reports
- added new print setups

7. ALL – A List of Known Problems or Bugs

K Degner has found and successfully corrected a few minor bugs since delivery. Other modifications since delivery have been made to accommodate new or modified user requirements that were unknown or undefined prior to delivery.

8. CAG – Identify Action Items and Wrap Up

Meeting Notes will be compiled and distributed by CAG (this document).

Design Documentation level of effort estimate will be prepared by CAG.

Attachment

Meeting Agenda

Consolidated Sampling Database Application Development

Closeout Meeting

Location: LANL Conference Room #1
Date & Time: Mon, Aug 29, 1994 @ 2:00 PM

Purpose & Goals:

CAG work on the mapper portion of the Consolidated Sampling Database application has been completed and delivered. As delivered, the application is a late beta version, not having actually been used in the field. The intention of the meeting is to document the current state of the application and related issues based on the views of the designer, users, and others. This meeting represents the final step in the CAG development activity.

Agenda:

1. CAG - A brief review of the task goals and results to this point.
2. CAG - The designer's observations on strengths and weaknesses of the application.
3. CAG - Identify items missing from the current delivery package.
4. LANL -The user's observations on strengths and weaknesses of the application.
5. LANL - Identify items missing from the current delivery package.
6. ALL -A list of improvements that would enhance the application.
7. ALL - A list of known problems or bugs.
8. CAG - Identify Action Items and Wrap up.

Distribution:

D Boak,	LANL,	EES-13/LV,	MS 527
J Canepa,	LANL,	EES-13,	MS J521
K Degner,	LANL,	EES-13/LV,	MS 527
N Elkins,	LANL,	EES-13/LV,	MS 527
G Hall,	CAG,	Carlton, OR	
J Hall,	CAG,	Carlton, OR	
F Homuth,	LANL,	EES-13/LV,	MS 527
H Kalia,	LANL,	EES-13/LV,	MS 527
A Mitchell,	LANL,	EES-13/LV,	MS 527
R Oliver,	LANL,	EES-13/LV,	MS 527
EES-13/LV,	LANL,	MS 527	
CAG Files,	Carlton, OR		

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Meeting Report

Consolidated Sampling Database System
CLOSE-OUT MEETING NOTES 8-29-94

1. **CAG** -- Brief Overview of the Task Goals and Results to This Point

Development Summary:

This task was a "rapid prototyping" process proceeded by a requirements analysis and conceptual modeling effort. The project initially defined in March/April, 1994 was an administrative database system for the TCO. The objectives of this system were centered around supporting reporting facilities for consolidated sampling activities. As the requirements analysis and conceptual modeling activity proceeded, an organizational view (TCO) of the system was formed including functional modularization from which the idea for a "mapper module" emerged. The system development project was then focused in on the mapper module which was subsequently completed and delivered July/August, 1994. The following development history details development activities.

Development History:

March 24, 1994
Initial Discussions
- First meeting with D Boak regarding idea of developing a sample tracking database system in FileMaker Pro.
- Focus upon supporting TCO report generation for internal use and for PIs.
- D Boak presents a preliminary conceptual data model for system and working reports.

Action: Develop FileMaker files derived from preliminary data model and reports.

April 15, 1994
TCO Requirements Definition
- R Oliver's ESF/TCO Test Plan Sequence Planning Table is introduced.
- Additional working reports are presented by D Boak.
- Specific information is elicited regarding TPP, JP, WBS, WP, SP, etc. files.
- FileMaker file system for maintaining sample collection and peripheral data is under development.

Action: Continue development TCO of file system for sample tracking in FileMaker.

Develop R Oliver's ESF/TCO Test Plan Sequence Planning Table in FileMaker.

May 5, 1994
TCO Requirements Definition

- Introduction of large administrative files (FAX log, document lists, TWS numbers) by R Oliver for integration into development FileMaker file system.
- Discussion regarding suitability of FileMaker for this project.
- High level meeting regarding data elements to be included in TCO sample tracking system, the grouping of those elements into files, and the relationships (links) needed between the files.
- R Oliver's ESF/TCO Test Plan Sequence Planning Table in FileMaker is completed.

Action: Continue file system development and FileMaker layout designs for data entry.
Develop main navigation facility for movement between files.
Implement "links" between files.

May 13, 1994
TCO Conceptual Model/Mapper Module Introduction

- Initial meeting with A Mitchell regarding his involvement in sample collection system development project.
- Discussed with D Boak the possibility of developing a system for the use by the mappers on the mapping gantry behind the TBM for sample collection data capture.

Action: Develop high level graphical description of system files.
Continue layout development for data entry.

May 16, 1994
TCO Conceptual Model/Mapper Module Requirements Definition

- Presented graphical description of system files (this is still the TCO view, mapper integration and the extent of a mapper system is still in initial discussion).
- R Oliver expresses concern regarding continued development efforts in FileMaker. His preference is Microsoft Access.
- R Oliver provides additional conceptual input regarding system file structure and the hierarchies existing between organizational documents.
- Continued brainstorming and definition discussions of a mapper module.

Action: Integration of new information from R Oliver into FileMaker file structure.
Automate peripheral file updates (when parent or "linked" file is modified).

May 27, 1994
Mapper Module Requirements Definition

- Introduction of S Beason to idea of mapper system module.
- Discussions regarding system requirements for mapper module become more focused.
- The mapper module development effort is identified as a critical activity in the overall system development process.

Action: Begin development of the mapper module file structure and user interface.

June 7, 1994
Mapper Module Requirements Definition & Initial Application Development
- Discussion of security levels for different mapper users.
- Discussion of operational details specific to mapper activity. S Beason's input is needed.
- Hardware requirements discussed.

Action: Continue mapper module development effort.

June 14, 1994
Process Model Overall System/Mapper Reporting Requirements
- Presentation of current mapper module version.
- Change requests; response to S Beason's requirements.
- Development of new TCO data entry layouts.

Action: Continue mapper module development effort.

July 6, 1994
Advanced Mapper Module Development: Respond to change requests coming from S Beason

July 11, 1994
Advanced Mapper Module Development
- Hardware issues continue to go unresolved.
- Geologic and thermomechanical unit representations are unresolved. Waiting on S Beason.
- Reporting requirements modified to include new transfer of custody form.
- Respond to change requests.
- Resolving the specific content of a number of menus in system.

Action: Continue mapper module development effort.

July 13, 1994
Advanced Mapper Module Development
- Hardware issues continue to go unresolved.
- Geologic and thermomechanical unit representations are unresolved. Waiting on S Beason.

Action: Respond to change and repair requests.
Continue mapper module development effort.

July 18-August 5, 1994
Advanced Mapper Module Development
- Geologic and thermomechanical unit representations are resolved.
- Changes requests implemented.
- User documentation prepared.
- Debugging.
- Import/export facilities completed.

Action: Final beta version delivered.

2. **CAG** The Designer's Observations on Strengths and Weaknesses of the Application

Strengths: FileMaker provides relatively easy maintenance.

Weaknesses:
- Application performance will slow down as large files increase in size.
- Because application is currently implemented in "interactive" FileMaker, there is a risk of end-users modifying and damaging the application. Alternatives for correcting this condition include implementing the application in "runtime" FileMaker or re-implementing FileMaker built-in user level file protection.

3. **CAG** Identify Items Missing From the Current Delivery Package

*Design documentation*has not been prepared for the application. This documentation will be
important for supporting successful and timely modification of the application in the future. It will also play a key role in assisting system administrators in maintenance and debugging.

TCO reporting facilities were not completed before delivery. While the main user interface for generating TCO reports has been built, the reports themselves have not been built into the system. K Degner is now working on these reports.

4. **LANL** The User's Observations on Strengths and Weaknesses of the Application

Strengths:
- FileMaker provides relatively easy maintenance (K Degner, D Boak).
- Application is provides platform portability between Mac & PC (D Boak).
- Application is a stable beta version that conforms to currently known user requirements (D Boak, A Mitchell, K Degner).

Weaknesses: Application is yet untested in the field (D Boak, A Mitchell, K Degner).

5. **LANL** Identify Items Missing From the Current Delivery Package

TCO reporting is now being added to the application by K Degner. These reports are expected to be completed following TBM startup.

6. **ALL** A List of Improvements That Would Enhance the Application

SMF Module module development was discussed early on in the requirements analysis phase of this project. Integration of the SMF into the database system is still seen as a logical and strategic next step in enhancing the current system.

TCO Reporting facilities completion has been identified as the highest priority enhancement. In order for the TCO to benefit from the system, it must be able to produce a number of defined reports from database sample criteria and collection data.

7. ALL A List of Known Problems or Bugs

K Degner has found and successfully corrected a few minor bugs since delivery. Other modifications since delivery have been made to accomodate new or modified user requirements that were unknown or undefined prior to delivery (e.g., label layout had to be reoriented to match the label stock purchased).

8. CAG Identify Action Items and Wrap Up

Meeting Notes will be compiled and distributed by CAG (this document).

Design Documentation level of effort estimate will be prepared by CAG for producing complete design documentation for the application.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

MEMORANDUM

CAG: 919421501
LANL Subcontract: 9–X52-Z9658–1

Wed, Aug 3, 1994

To: Fred Homuth
From: Jim Hall
Subject: Closeout Meeting for the Sample Collection Information System database application

The mapper portion of the Sample Collection Information System application has been completed and turned over to A Mitchell. As delivered, the application is a late beta version, not having actually been used in the field. While it includes a user interface for the TCO, certain reporting facilities requested by the TCO are not implemented. The delivered portion of the application will probably need additional work to incorporate TCO and user requested changes. The final step in the current development activity should be a closeout meeting that is meant to accomplish the following results:

1. A brief review of the task goals and results to this point.
2. The user's observations on strengths and weaknesses of the application.
3. The designer's observations on strengths and weaknesses of the application.
4. A list of improvements that would enhance the application.
5. A list of known problems or bugs.
6. Identify items missing from the current delivery package.

I requested this meeting earlier this week through A Mitchell and he indicated that it was unnecessary. Based on conversations with Mitchell, I feel that there may be a misunderstanding in the office of the intention of this meeting, confusing it with an acceptance or formal acknowledgement of task completion.This complex application has required significant LANL resources to develop and not completing the closeout process may impact ongoing TCO support activities. The proposed meeting is intended to document the current state of the application and related issues based on the views of the designer, users, and others not recorded in other ways. I strongly recommend that this meeting be scheduled for the week of Aug 29, 1994.

Cy: N Elkins, LANL, EES-13/LV, MS 527
D Boak, LANL, EES-13/LV, MS 527
A Mitchell, LANL, EES-13/LV, MS 527
K Degner, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

Yucca Mountain Project

Sample Collection Information System

User Manual

for

Mappers

Version 1.0

About the System

The Yucca Mountain Project Sample Information System (SIS) is a FileMaker Pro application. It is composed of 15 files, each containing and processing some of the information needed to assist mappers in collecting samples which satisfy requests by principle investigators (PIs).

SIS provides reporting facilities which automate the generation of Sample Collection Reports, Sample Transfer of Custody and Recept Forms, and Shipping and Sample Labels.

SIS also provides automated import and export facilities, allowing mappers to easily transmit information about samples collected to the TCO and to update sampling criteria from the TCO.

Starting the System

FileMaker Pro v2.1 or later must be installed on your PC.

The following SIS files must be in one directory on your PC:

ACTIVITY.FM	PI.FM
COLLECT.FM	SDYPLAN.FM
COLLRPT.FM	SPS.FM
EXPORT.FM	TMUNITS.FM
GEOUNITS.FM	TPPS.FM
JPS.FM	WBS.FM
LOGIN.FM	WPS.FM
ORGS.FM	

Start FileMaker Pro (double-click on its icon in the Windows Program Manager).

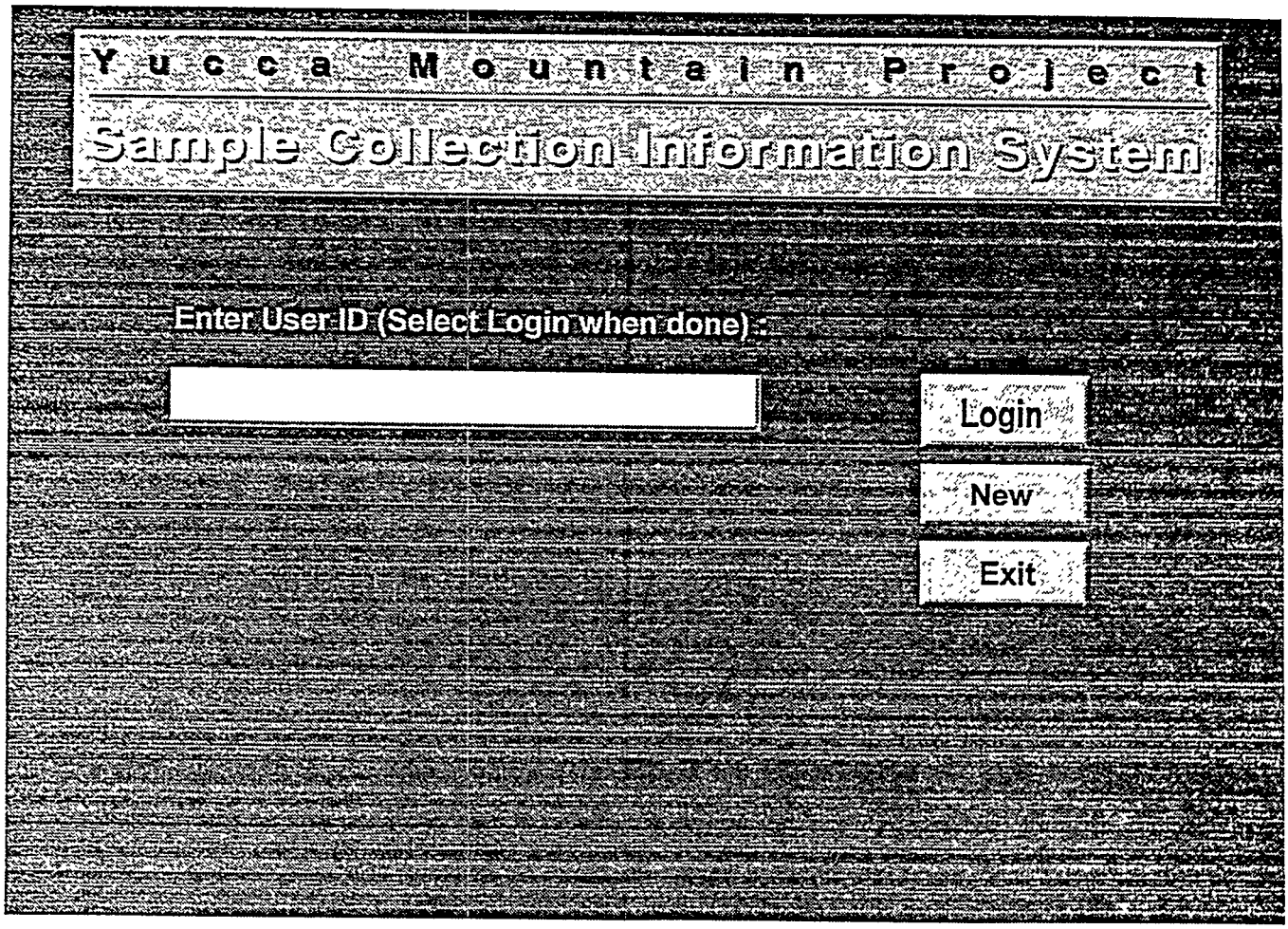
Open **LOGIN.FM** as follows:

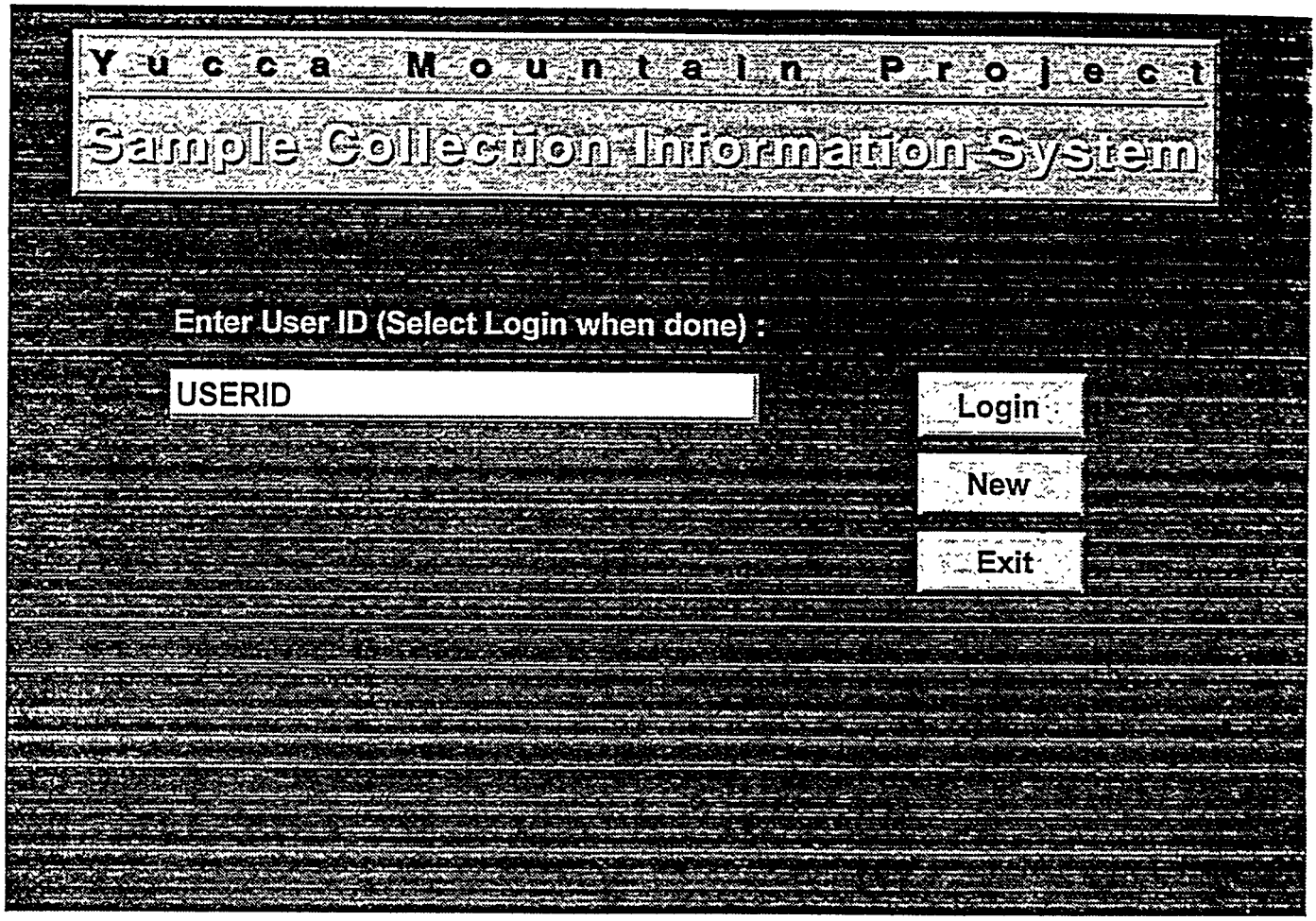
- — From the FileMaker main menu, select File/Open.
- — Select the hard drive (e.g. C:) from the Drives menu.
- — Select the directory in which the SIS files reside from the Directories menu.
- — Select LOGIN.FM.
- — Select OK.

Logging In

After you start the appliction (see previous section Starting the System), you will see the screen shown below. The system is asking for your User ID.

Enter your User ID (Example shown on facing page.)
Select **Login**.




Yucca Mountain Project
Sample Collection Information System
Enter User ID (Select Login when done) :
USERID
Login
New
Exit

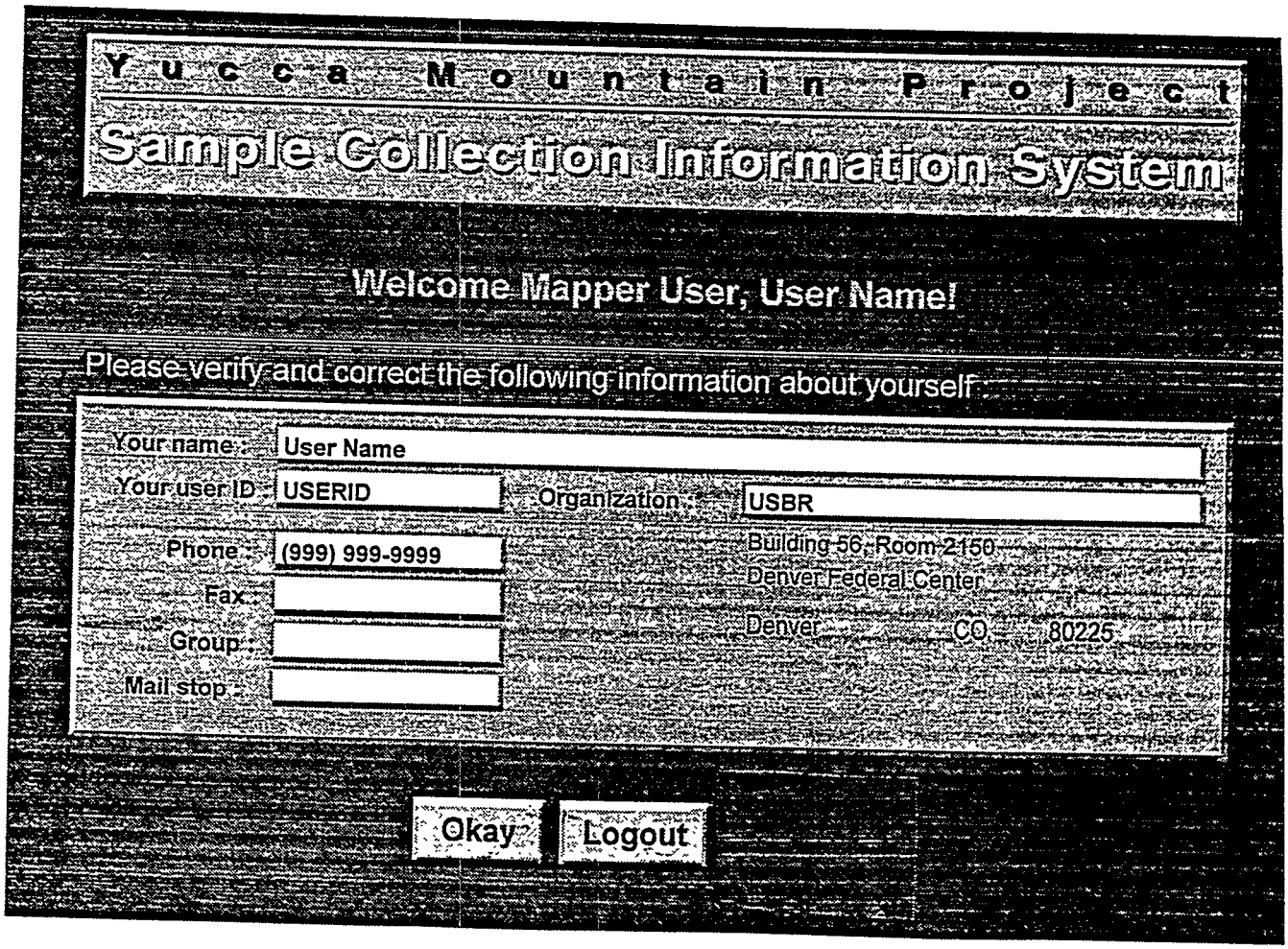
Logging In

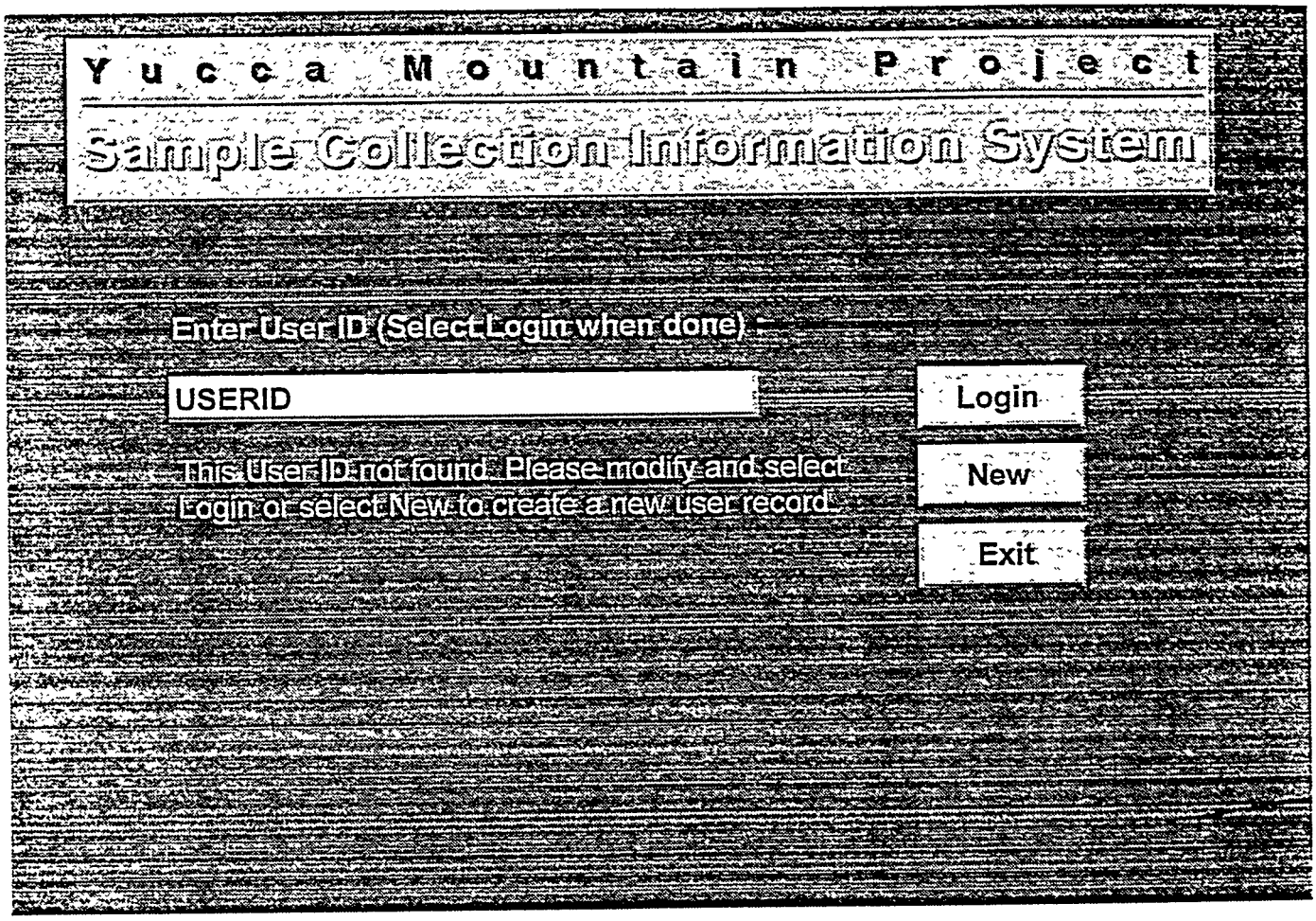
If you are a registered user, you will see the screen below after entering your User ID and selecting the **Login** button.

This screen identifies you by name and user level (Mapper User). It also shows you information the system has stored about you. Be sure to review this information when you login and make corrections as needed.

If you wish to change your User ID, you may do so here.

If you make a mistake in entering your User ID, or if your User ID is not valid, you will receive the message shown on the facing page after selecting **Login**.



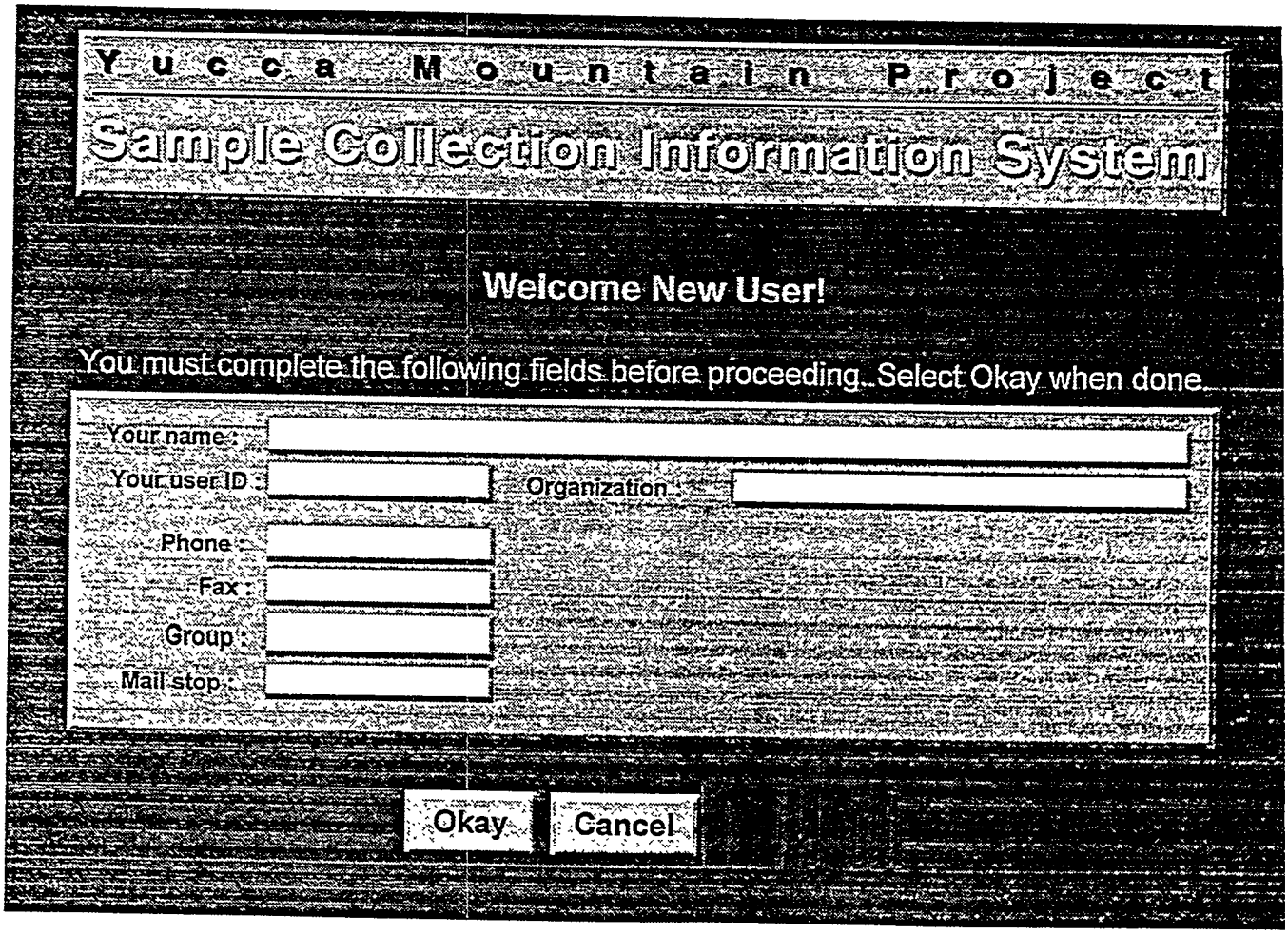

Yucca Mountain Project
Sample Collection Information System
Enter User ID (Select Login when done)
USERID
Login
New
Exit
This User ID not found. Please modify and select Login or select New to create a new user record.

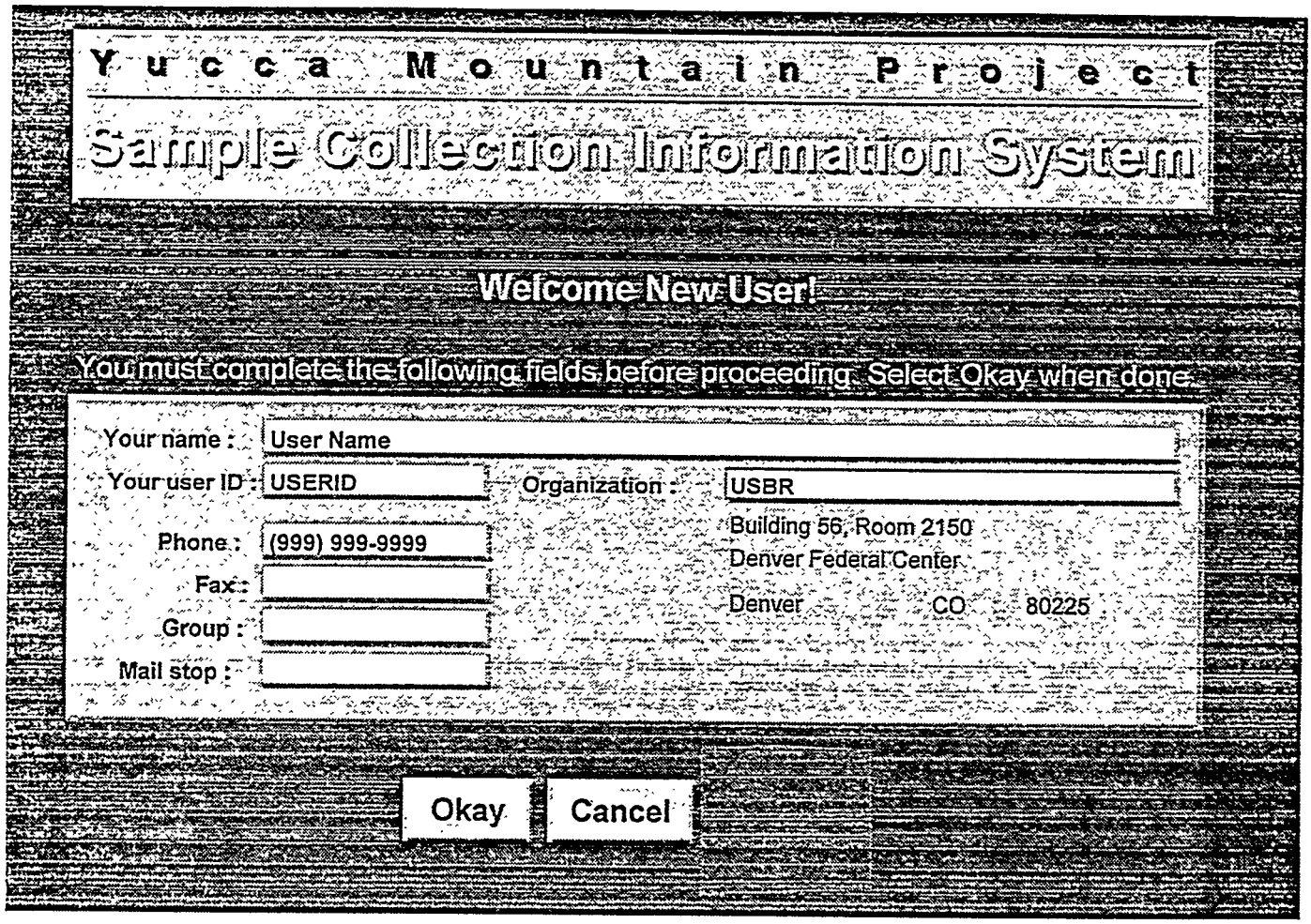
Becoming a Registered User

You may become a registered user and create a User ID for yourself by selecting **New** on the login screen. When you select **New**, the screen shown below will appear.

Complete all of the applicable fields.
Select **Okay**.
Select **Cancel** if you wish to cancel and permanently delete the new registered user record.

You MUST enter your full name, a User ID of your choosing, your business phone number, and your organization as shown on the facing page in order to proceed. Select your organization from the menu by tabbing to or clicking on the Organization field and selecting your organization name. Select Other and enter your organization name if yours is not on the menu.

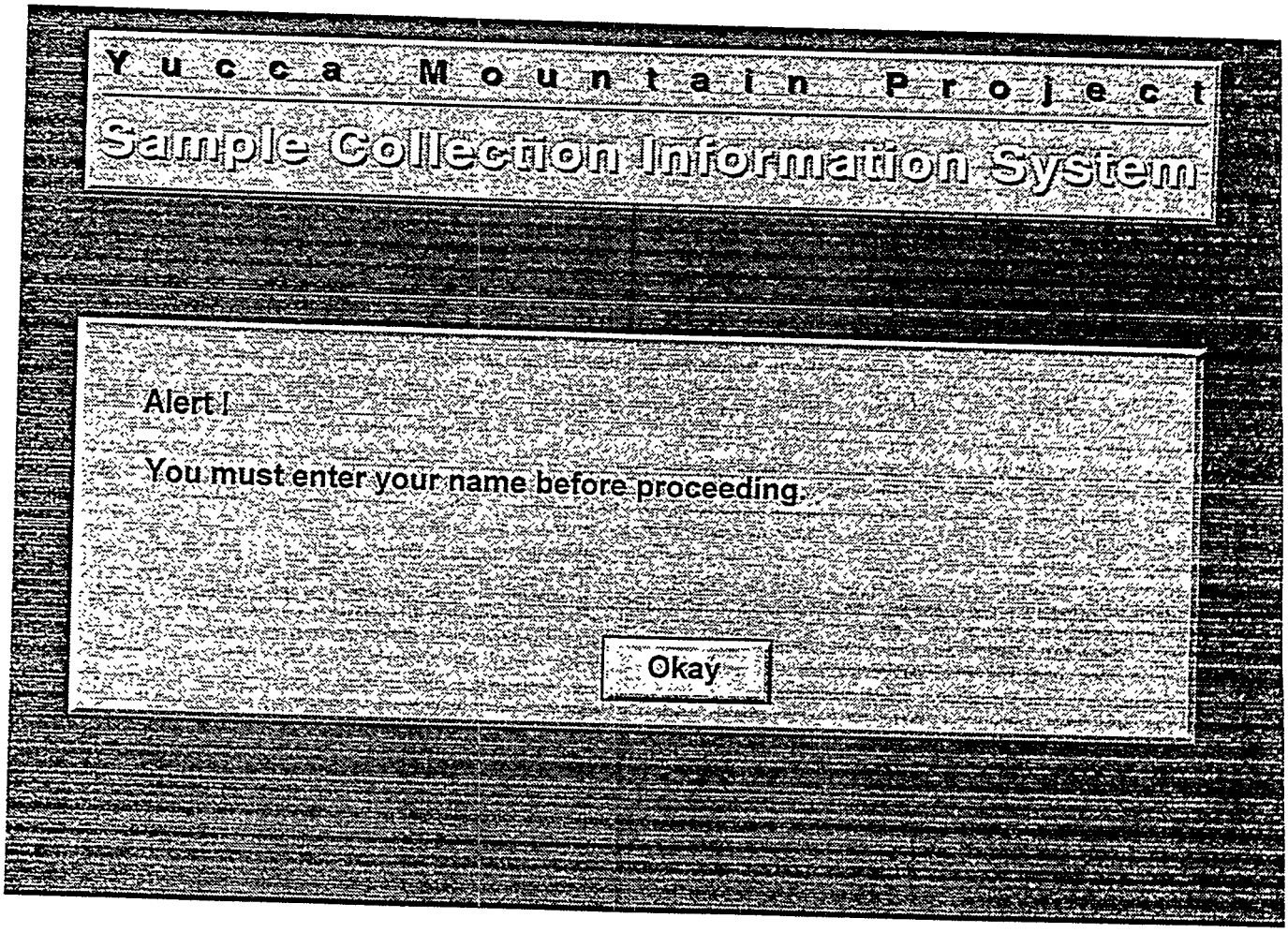


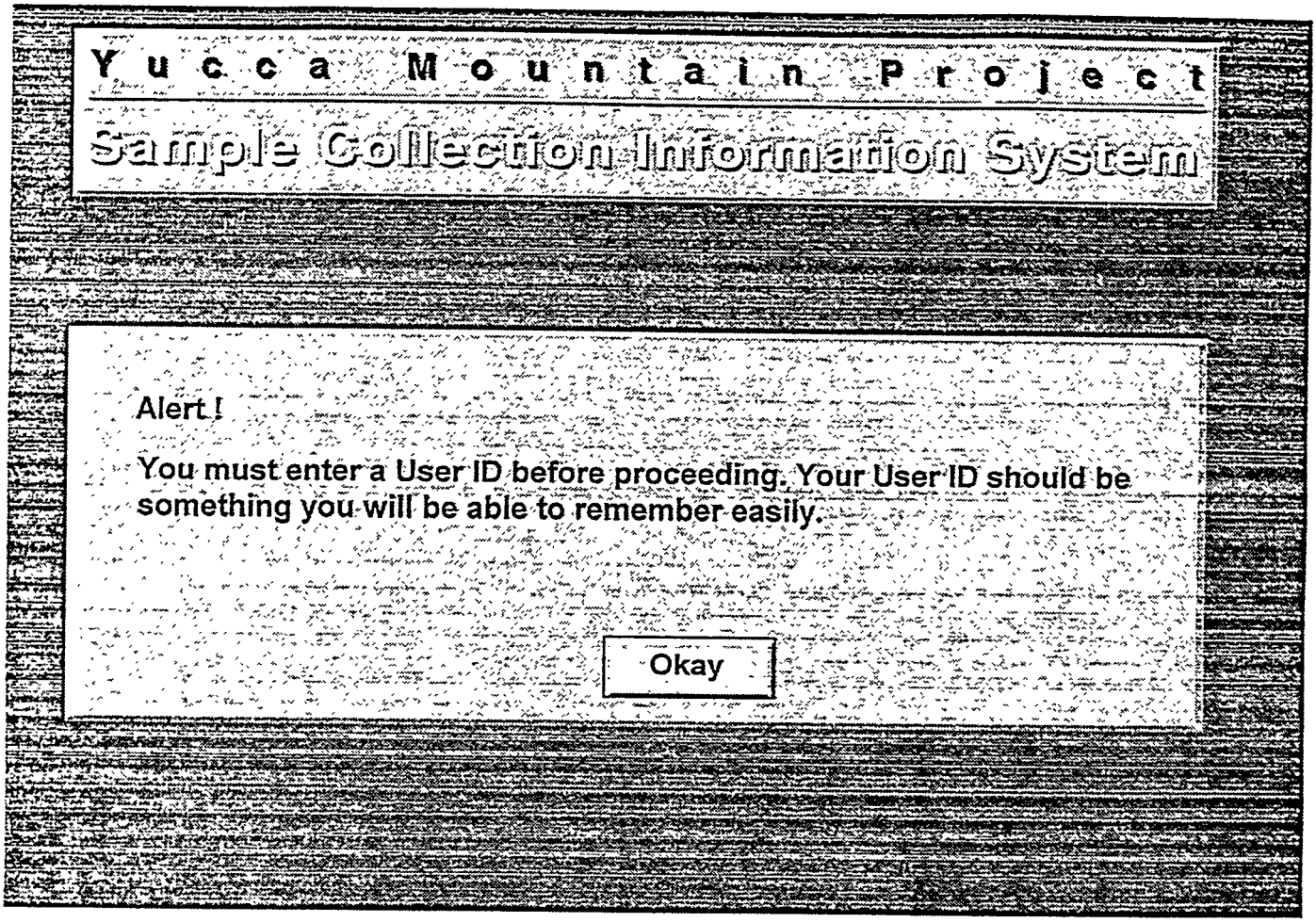

Yucca Mountain Project
Sample Collection Information System
Welcome New User!
You must complete the following fields before proceeding. Select Okay when done.
Your name :
User Name
Your user ID :
USERID
Organization :
USBR
Building 56, Room 2150
Denver Federal Center
Phone :
(999) 999-9999
Fax :
Group :
Mail stop :
Denver
CO
80225
Okay
Cancel

Becoming a Registered User

If you fail to enter any mandatory information about yourself when logging, you will see an Alert screen like one of those shown here.

Selecting **Okay** on any of these screens will return you to your user information screen.




Yucca Mountain Project
Sample Collection Information System
Alert!
You must enter a User ID before proceeding. Your User ID should be something you will be able to remember easily.
Okay

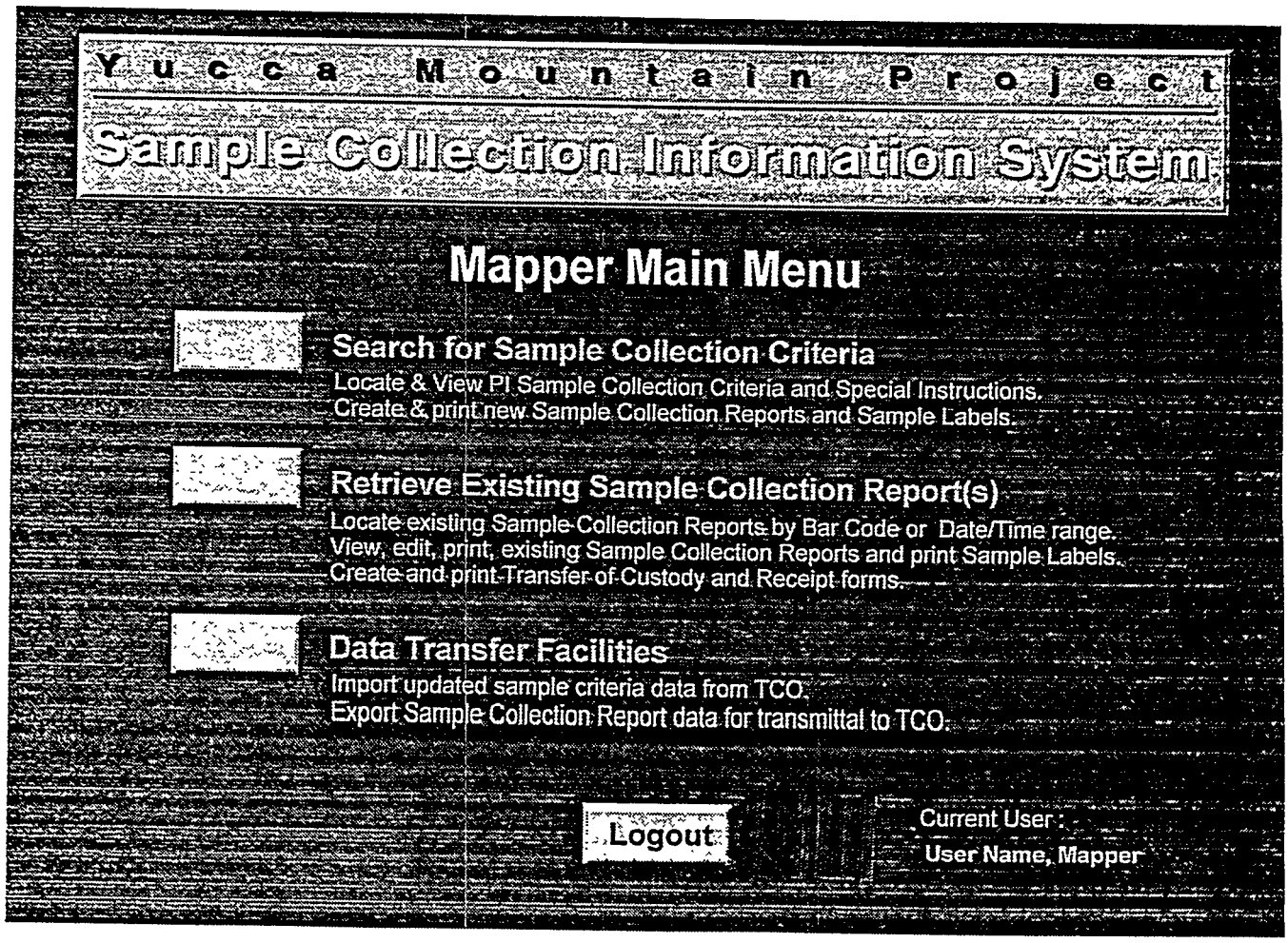
Searching for Sample Collection Criteria

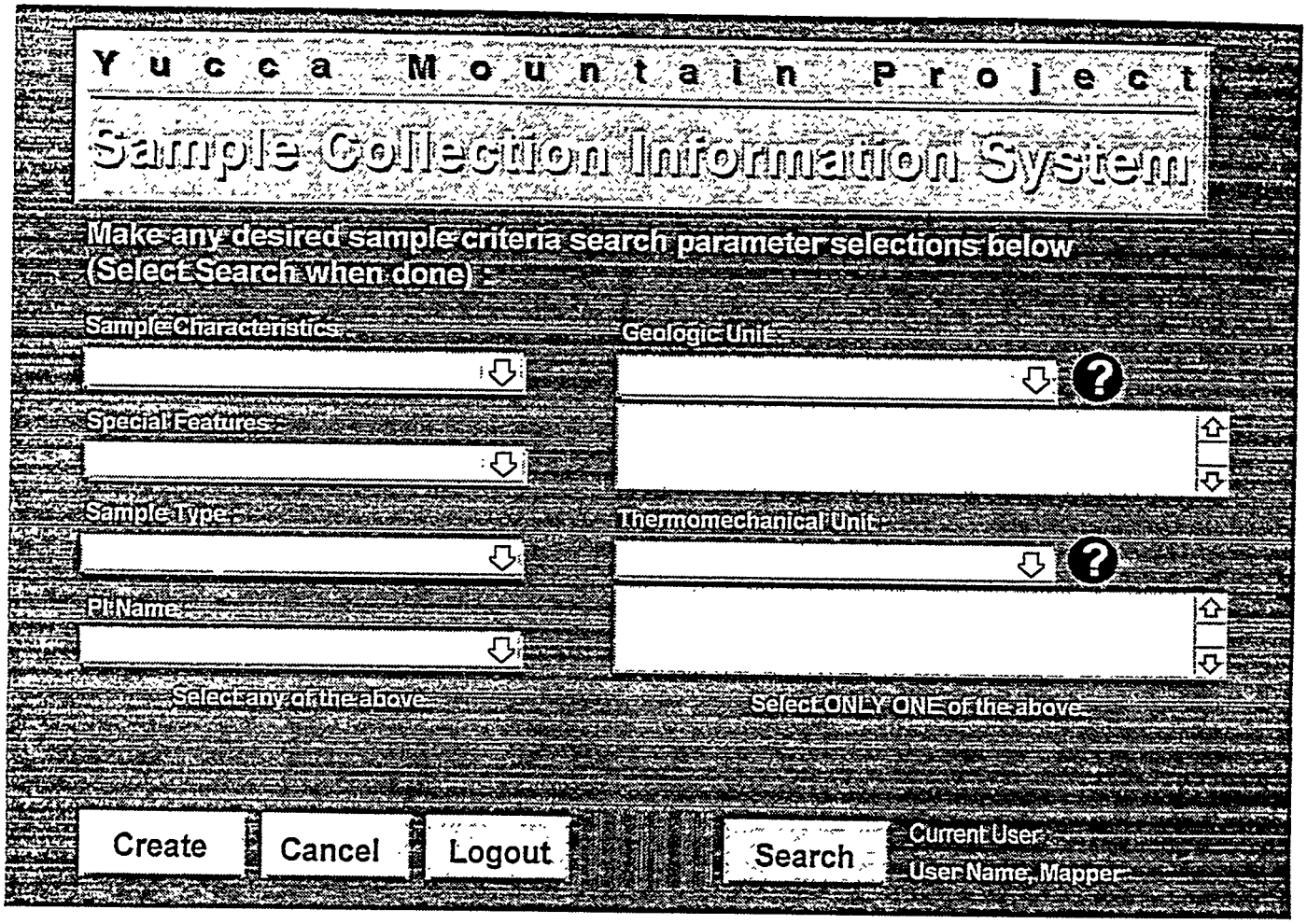
Once you have successfully logged in to the system, you will see the Mapper Main Menu screen shown below.

Your three choices are to search for sample collection criteria, retrieve an existing Sample Collection Report, and import or export data (to or from the TCO).

To initiate a Sample Collection Report, select **Search for Sample Collection Criteria.**

The search parameter screen shown on the facing page will appear.




Yucca Mountain Project
Sample Collection Information System
Make any desired sample criteria search parameter selections below
(Select Search when done)
Sample Characteristics
Special Features
Sample Type
PI Name
Select any of the above
Geologic Unit
Thermomechanical Unit
Select ONLY ONE of the above
Create
Cancel
Logout
Search
Current User:
User Name, Mapper

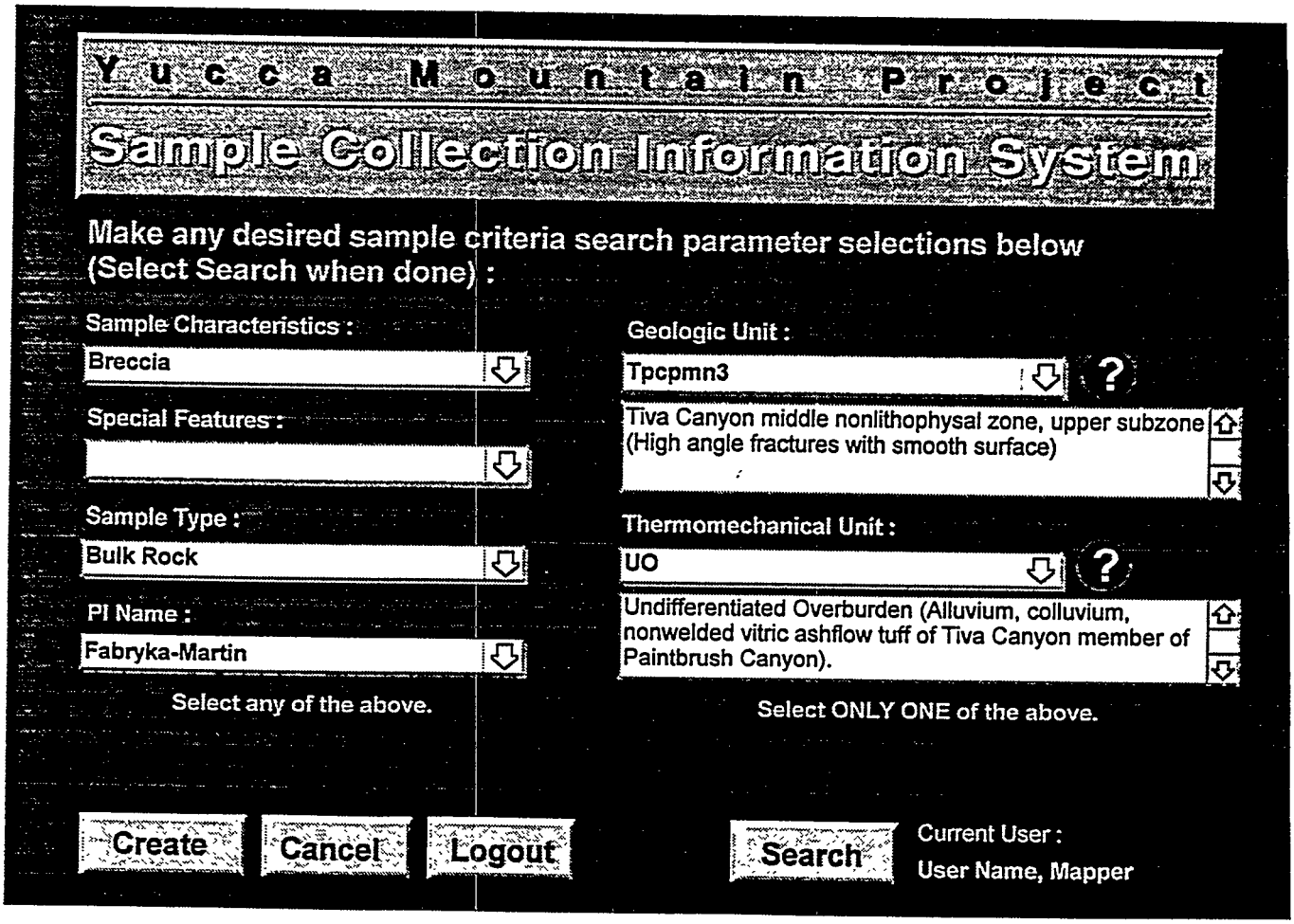
Searching for Sample Collection Criteria

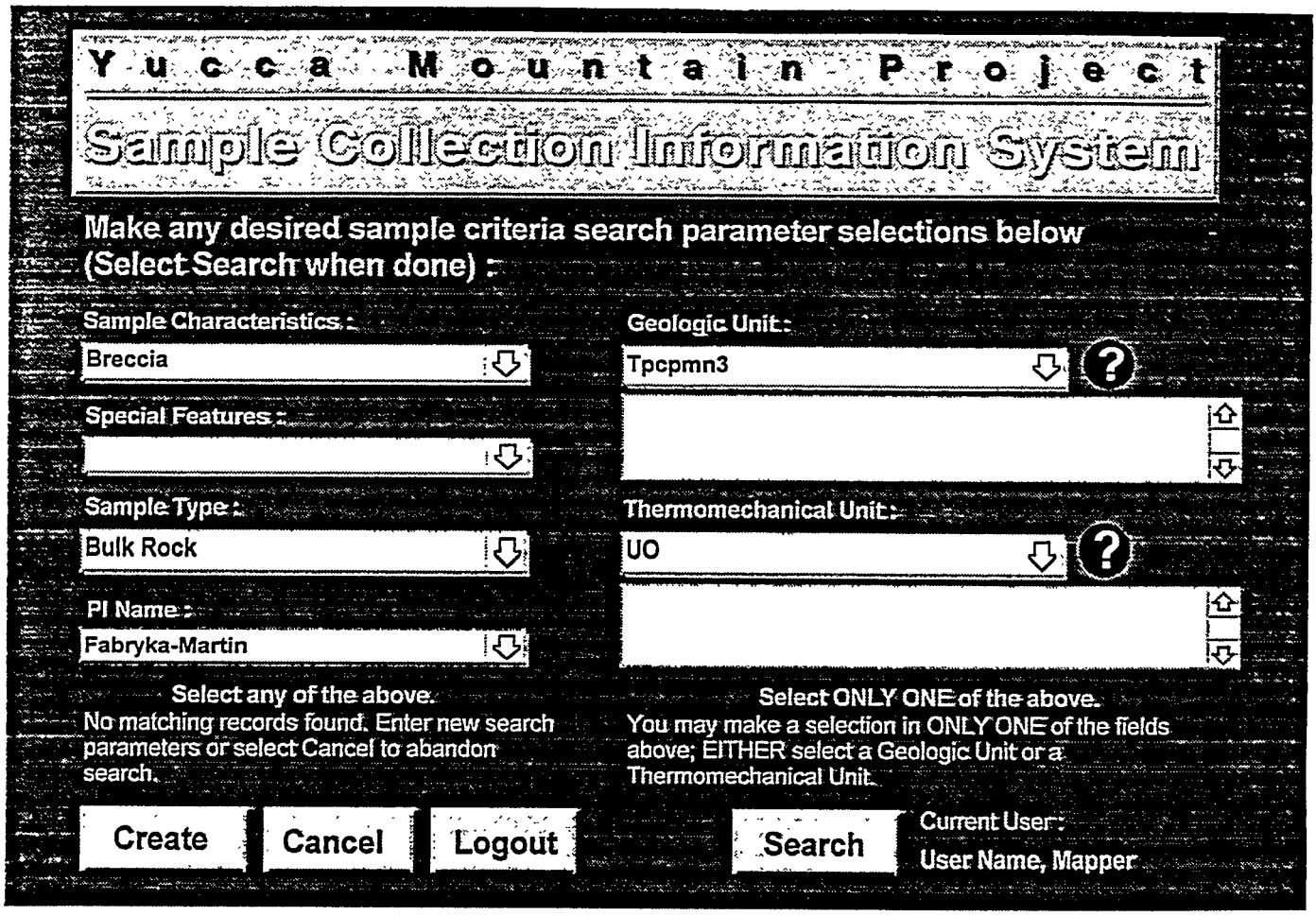
Each of the fields on the search parameter screen are menus.

Make selections from these menus to best describe the Sample Characteristics (e.g., Breccia, Calcite, Opal), any Special Features involved (e.g., Contacts, Faults, Fractures), the Sample Type (e.g., Bulk Rock, Core, Gel), and the PI involved.

You may select only one of Geologic or Thermomechanical Units. If selections are made from both of these menus, an error message will appear as shown on the facing page. To view a description of a selected Geologic or Thermomechanical Unit, select the corresponding **?** button.

Select **Search** whenever you wish to try to locate sample collection criteria matching your seach prarmeters.



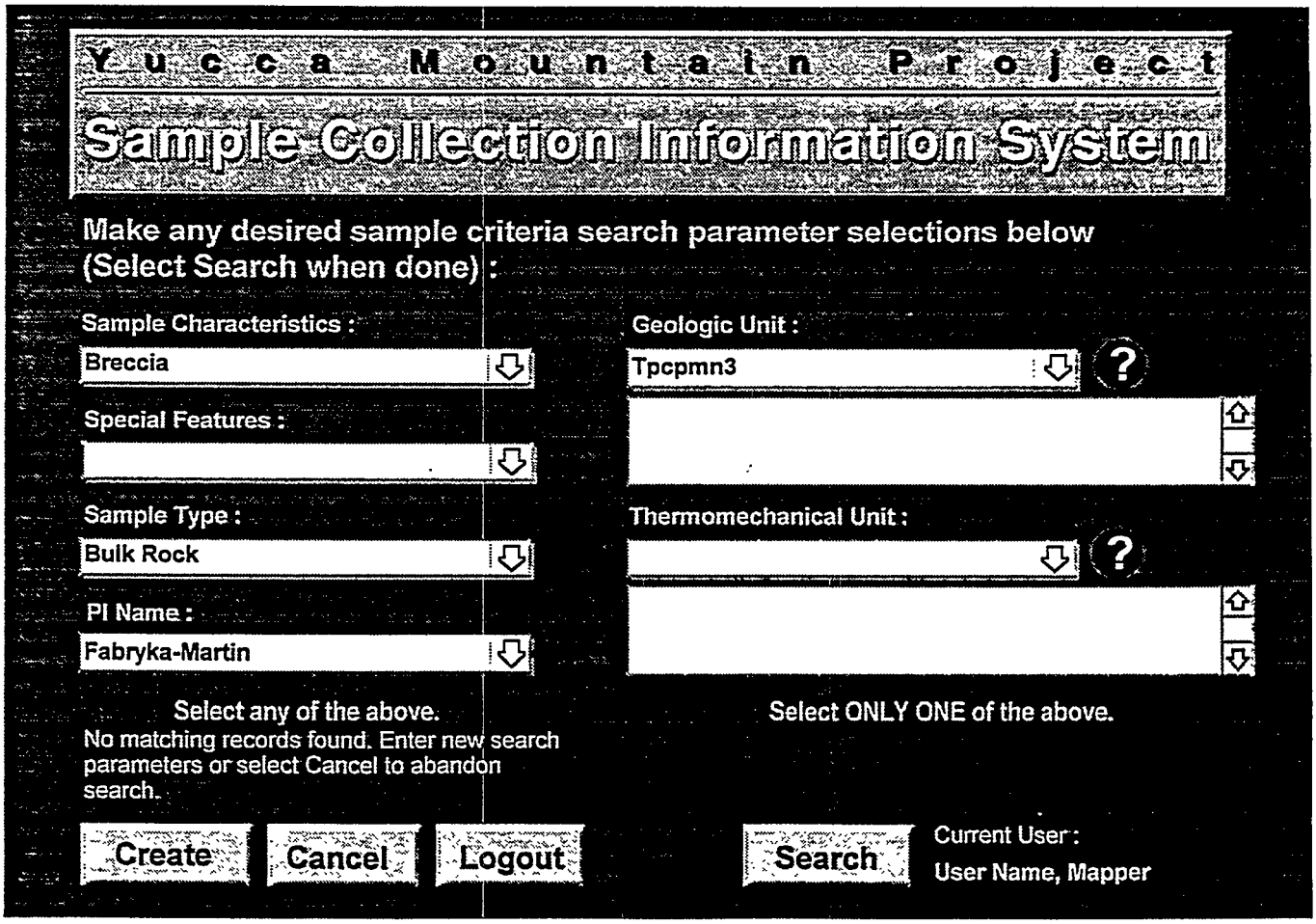

Yucca Mountain Project
Sample Collection Information System
Make any desired sample criteria search parameter selections below
(Select Search when done) :
Sample Characteristics :
Breccia
Special Features :
Sample Type :
Bulk Rock
PI Name :
Fabryka-Martin
Select any of the above.
No matching records found. Enter new search parameters or select Cancel to abandon search.
Geologic Unit :
Tpcpmn3
Thermomechanical Unit :
UO
Select ONLY ONE of the above.
You may make a selection in ONLY ONE of the fields above; EITHER select a Geologic Unit or a Thermomechanical Unit.
Create
Cancel
Logout
Search
Current User :
User Name, Mapper

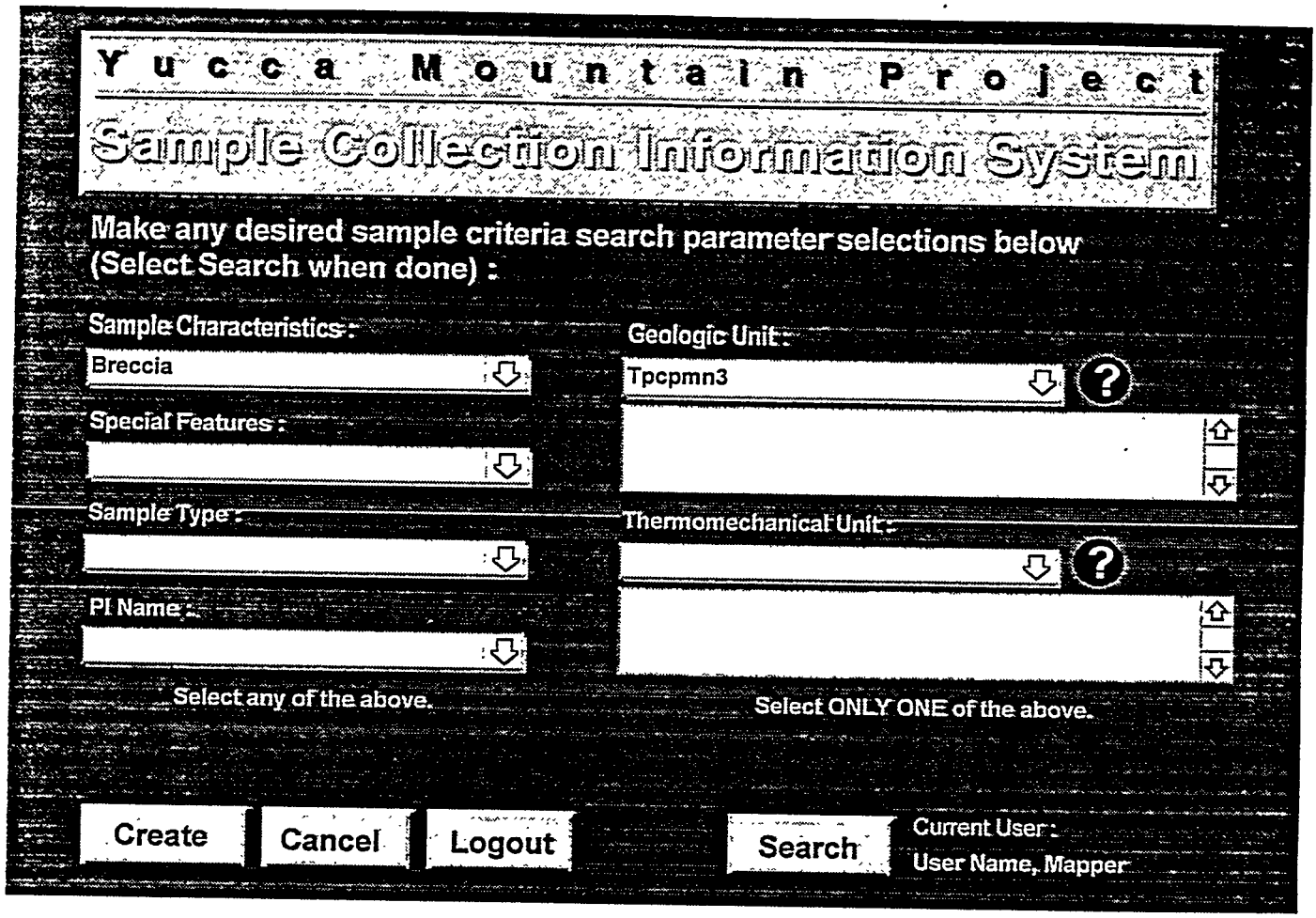
Searching for Sample Collection Criteria

Try your search with as few or as many parameter selections as you like. Remember, though, that the more search parameters you select, the worse your chances of finding a matching sample collection criteria record.

The following screens show an example of making two attempts at finding sample collection criteria matching the search parameters. The first seach failed. As shown below, the message "No matching records found. Enter new search parameters or select Cancel to abandon search." appeared after selecting **Search**.

A second attempt was made with a reduced set of parameters as shown on facing page. This time the search was successful...





There may be times when you need to create a Sample Collection Report for a sample requested specially by a PI. If you are unable to find sample criteria matching the PI's special request in the system, use the **Create** button to create a blank Sample Collection report, not based upon any sample collection criteria in the system.

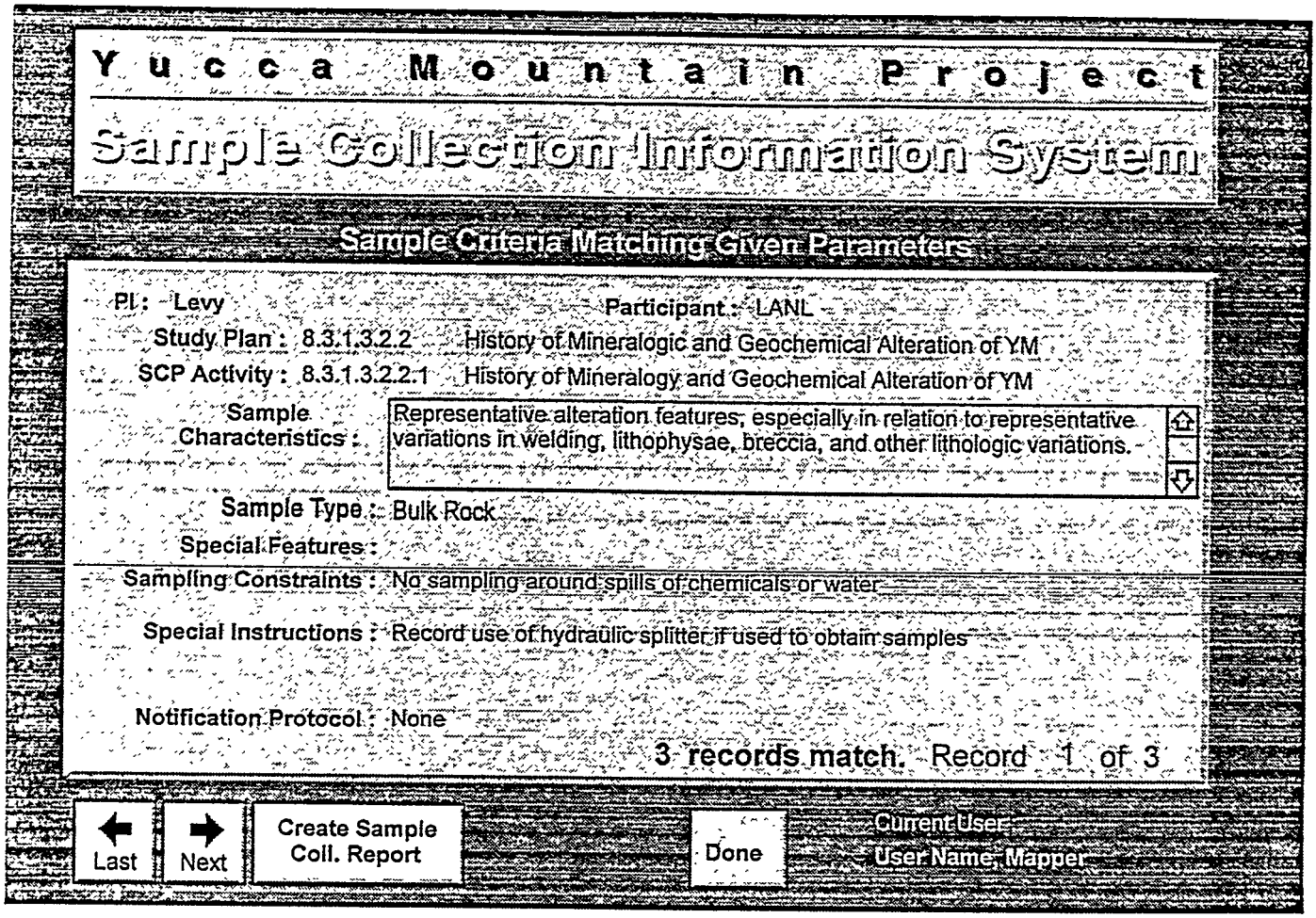
Creating a Sample Collection Report

When a sample collection criteria search is successful, a screen like the one shown opposite appears. This screen tells you how many records match your request, and summarizes the sample collection criteria given by the PI.

You may view each matching record by using the **Last** and **Next** buttons.

Select **Create Sample Coll Rpt.** to create a Sample Collection Report for the criteria you are currently viewing.

Select **Done** to return to the Mapper Main Menu without creating a Sample Collection Report.


Yucca Mountain Project
Sample Collection Information System
Sample Criteria Matching Given Parameters
PI: Levy
Participant: LANL
Study Plan: 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity: 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
Sample Characteristics:
Representative alteration features; especially in relation to representative variations in welding, lithophysae, breccia, and other lithologic variations.
Sample Type: Bulk Rock
Special Features:
Sampling Constraints: No sampling around spills of chemicals or water
Special Instructions: Record use of hydraulic splitter if used to obtain samples
Notification Protocol: None
3 records match. Record 1 of 3
Last
Next
Create Sample Coll. Report
Done
Current User:
User Name Mapper

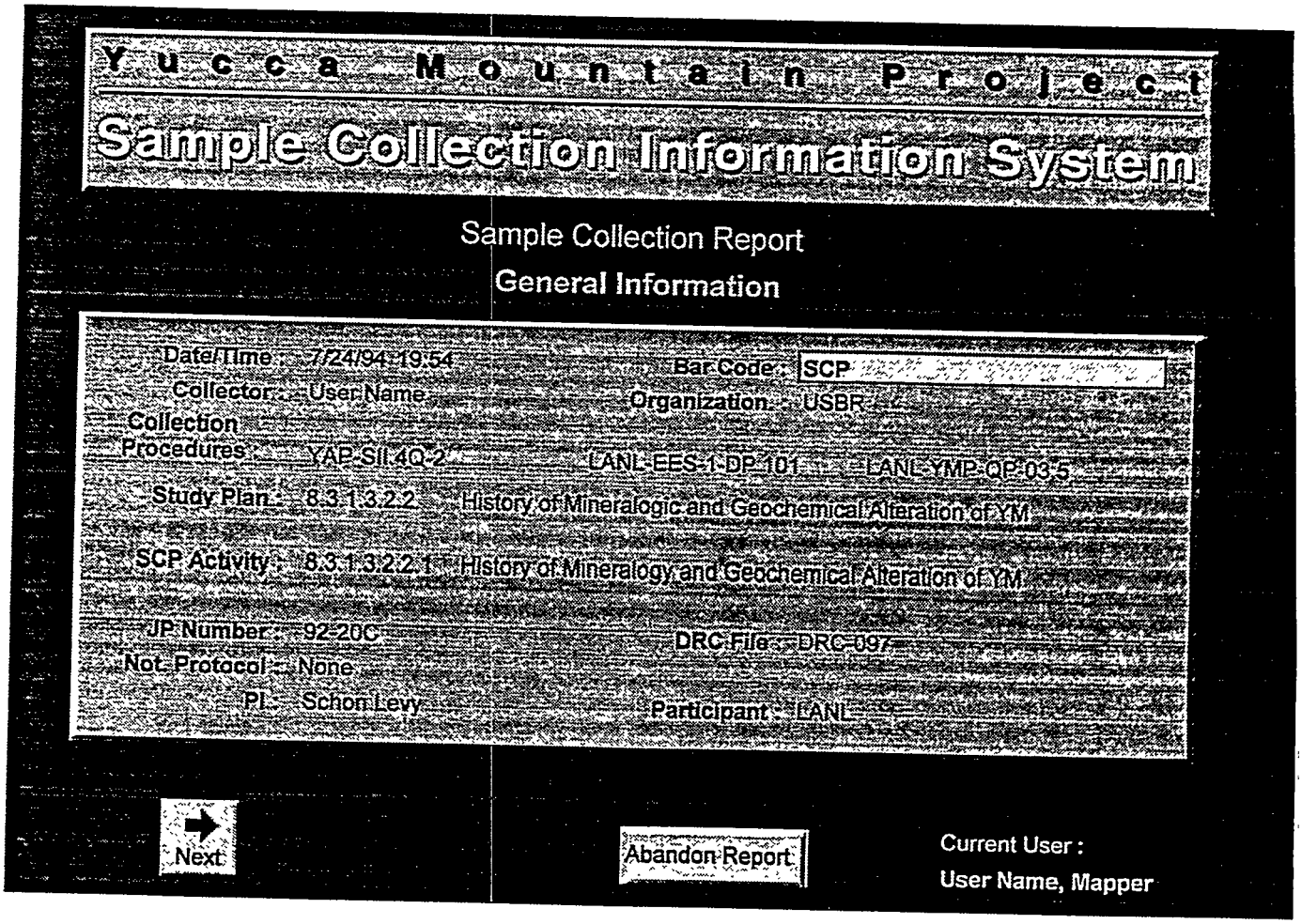
Creating a Sample Collection Report

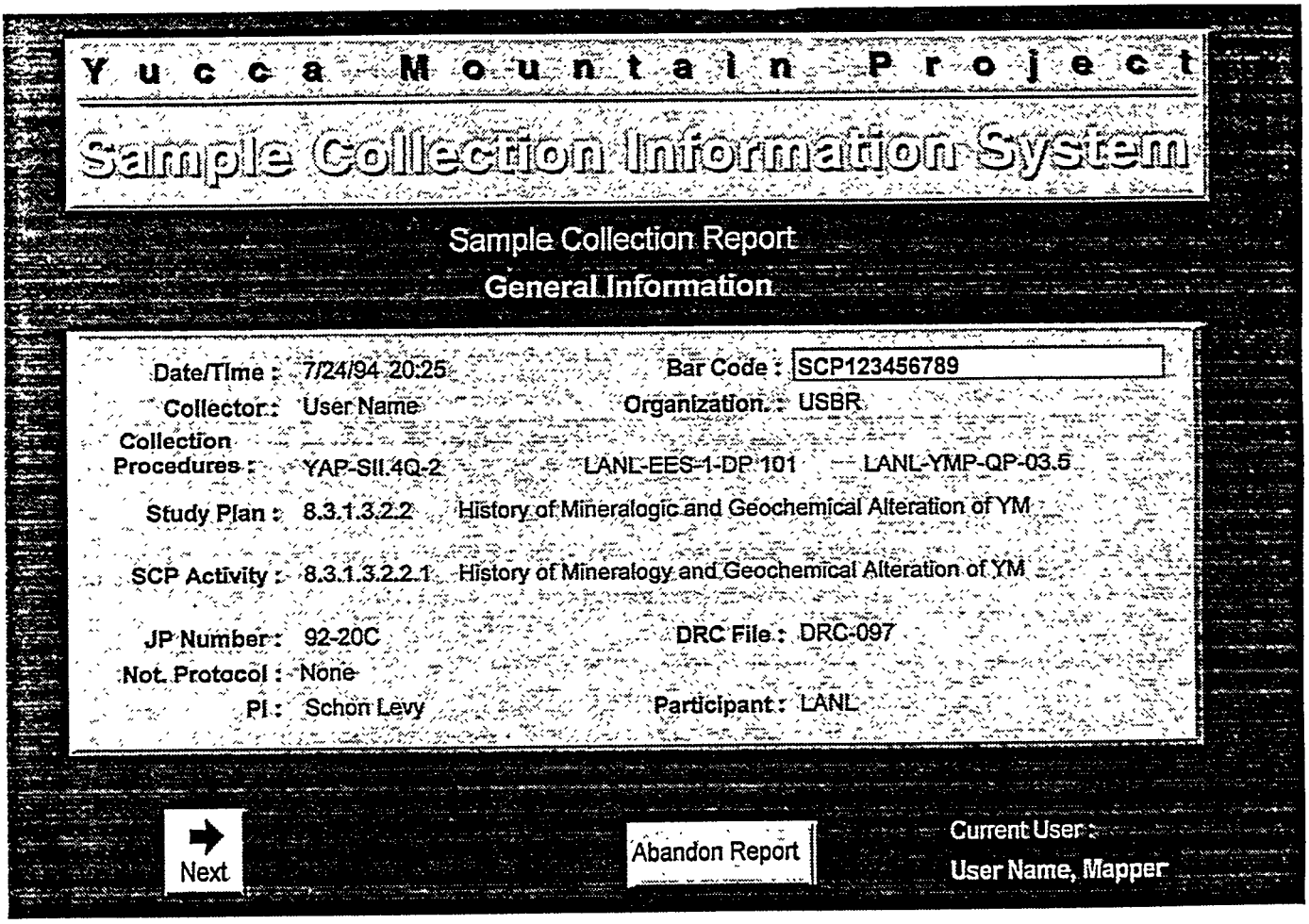
When you select **Create Sample Coll. Report**, the system initiates a new report with the sample collection criteria you were viewing.

The first screen of the Sample Collection Report appears as shown below.

Enter the sample bar code in the Bar Code field as shown oppostie.

Select the **Next** button to go to the next Sample Collection Report Screen.
Select the **Abandon** button to abandon and permanently delete the new Sample Collection Report.



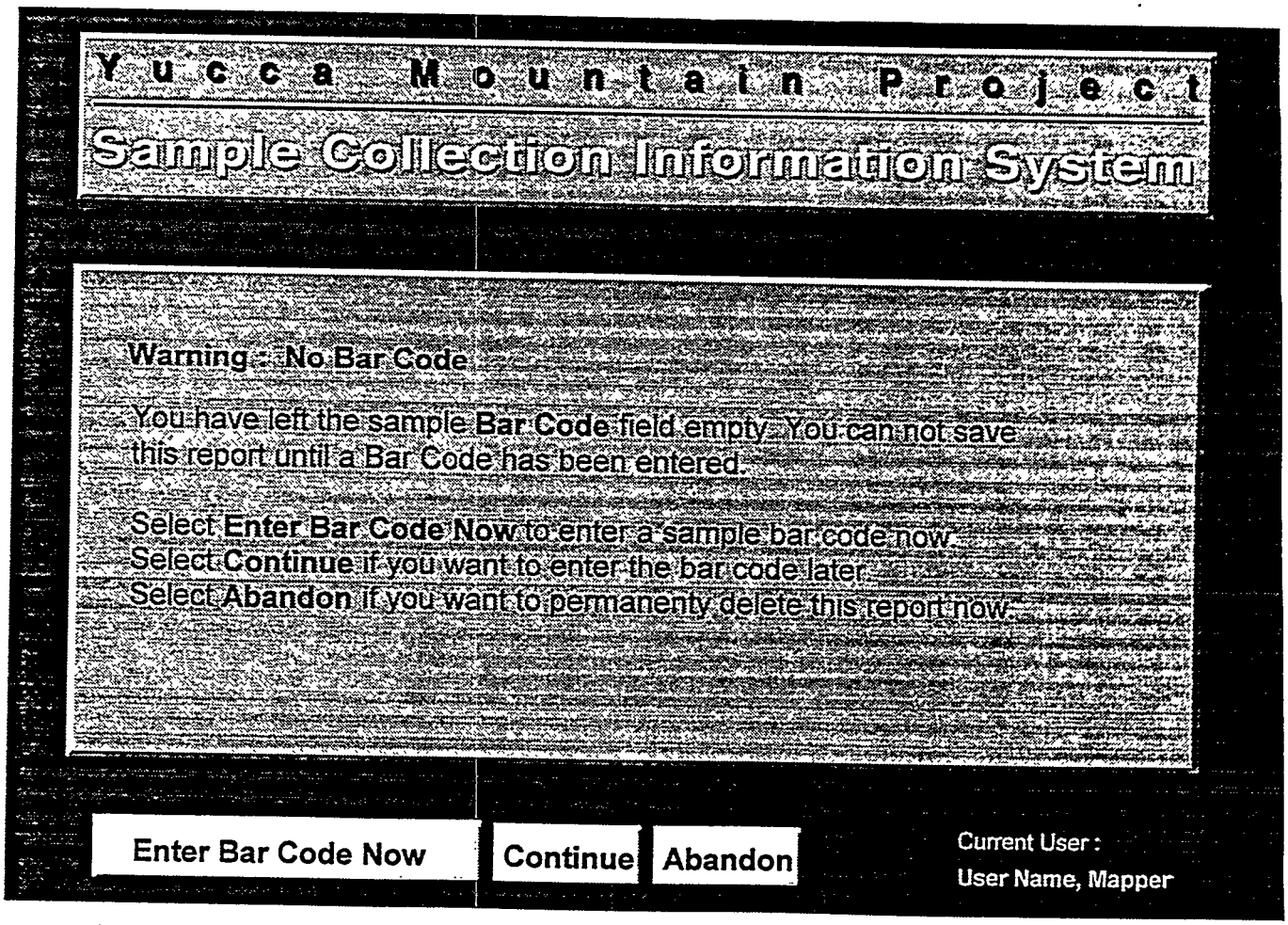

Yucca Mountain Project
Sample Collection Information System
Sample Collection Report
General Information
Date/Time : 7/24/94 20:25
Bar Code : SCP123456789
Collector : User Name
Organization : USBR
Collection Procedures : YAP-SII.4Q-2
LANL-EES-1-DP 101
LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM
SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM
JP Number : 92-20C
DRC File : DRC-097
Not. Protocol : None
PI : Schon Levy
Participant : LANL
Next
Abandon Report
Current User :
User Name, Mapper

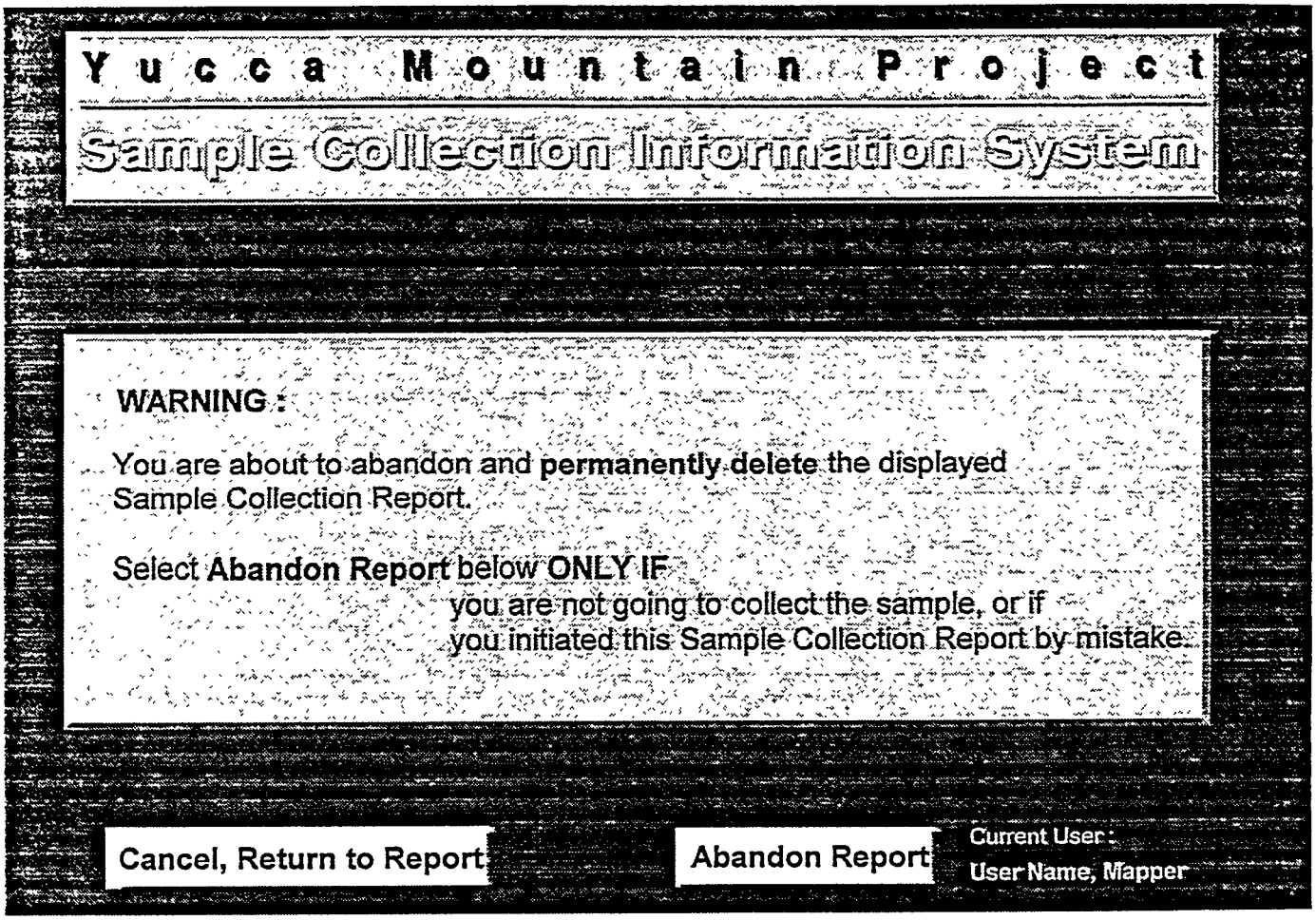
Creating a Sample Collection Report

If you select **Next** without entering a bar code, the Warning screen shown below will appear.

You may wait to enter the bar code until you have completed the rest of the report by selecting **Continue** on this Warning screen or enter the bar code immediately by selecting **Enter Bar Code Now**. You may also abandon the Sample Collection Report by selecting **Abandon**.

If you select **Abandon** at any time, the Warning screen shown opposite will appear, giving you a chance to change your mind.



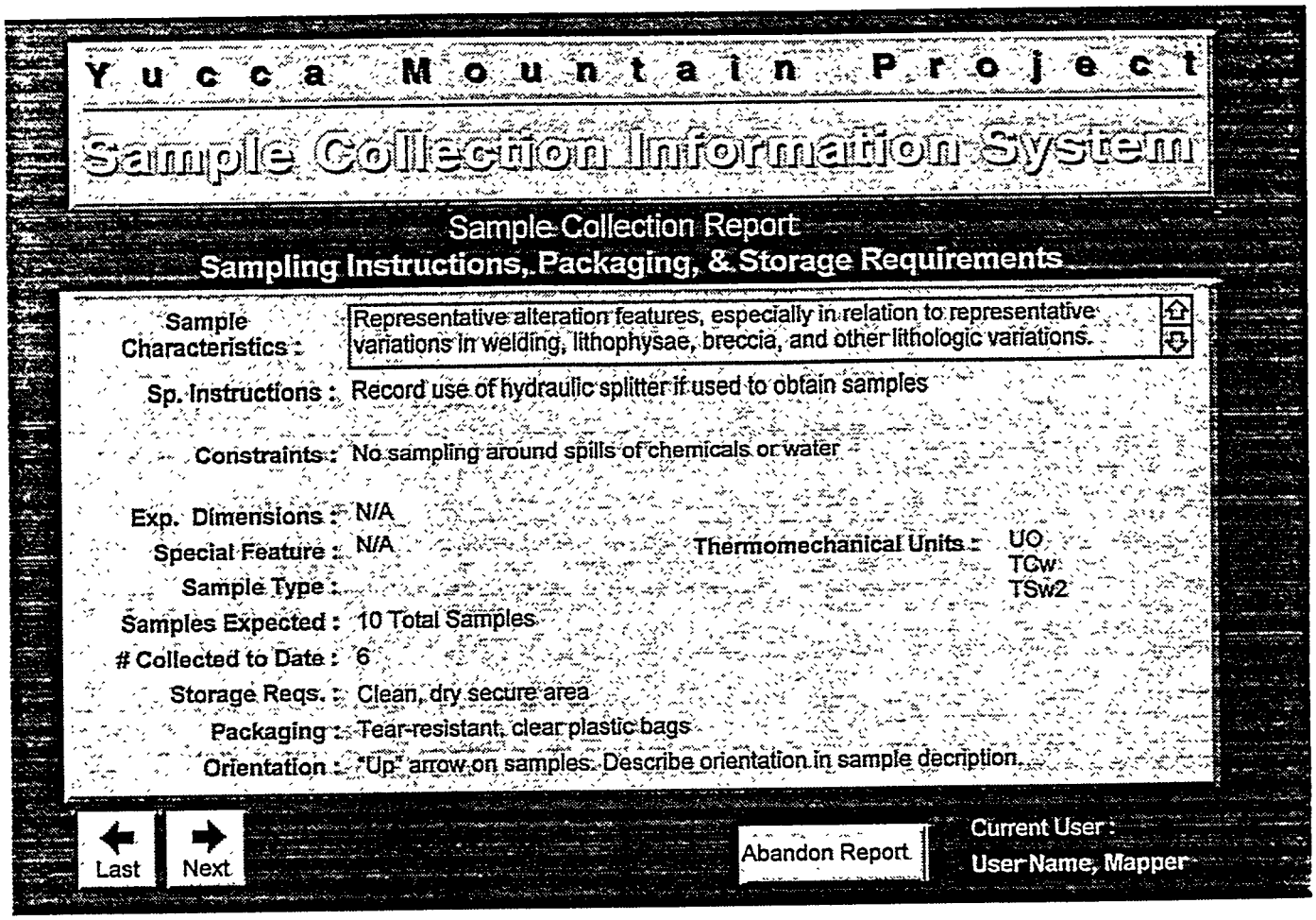

Yucca Mountain Project
Sample Collection Information System
WARNING :
You are about to abandon and permanently delete the displayed Sample Collection Report.
Select Abandon Report below ONLY IF
you are not going to collect the sample, or if
you initiated this Sample Collection Report by mistake.
Cancel, Return to Report
Abandon Report
Current User :
User Name, Mapper

Creating a Sample Collection Report

The second Sample Collection Report screen is shown opposite. This is an "information only" screen. You may not edit any of the fields.

This screen provides you with details regarding the PI's sample collection criteria.

Select **Next** to go to the last Sample Collection Report Screen, or...
Select **Last** to go to the previous Sample Collection Report Screen.

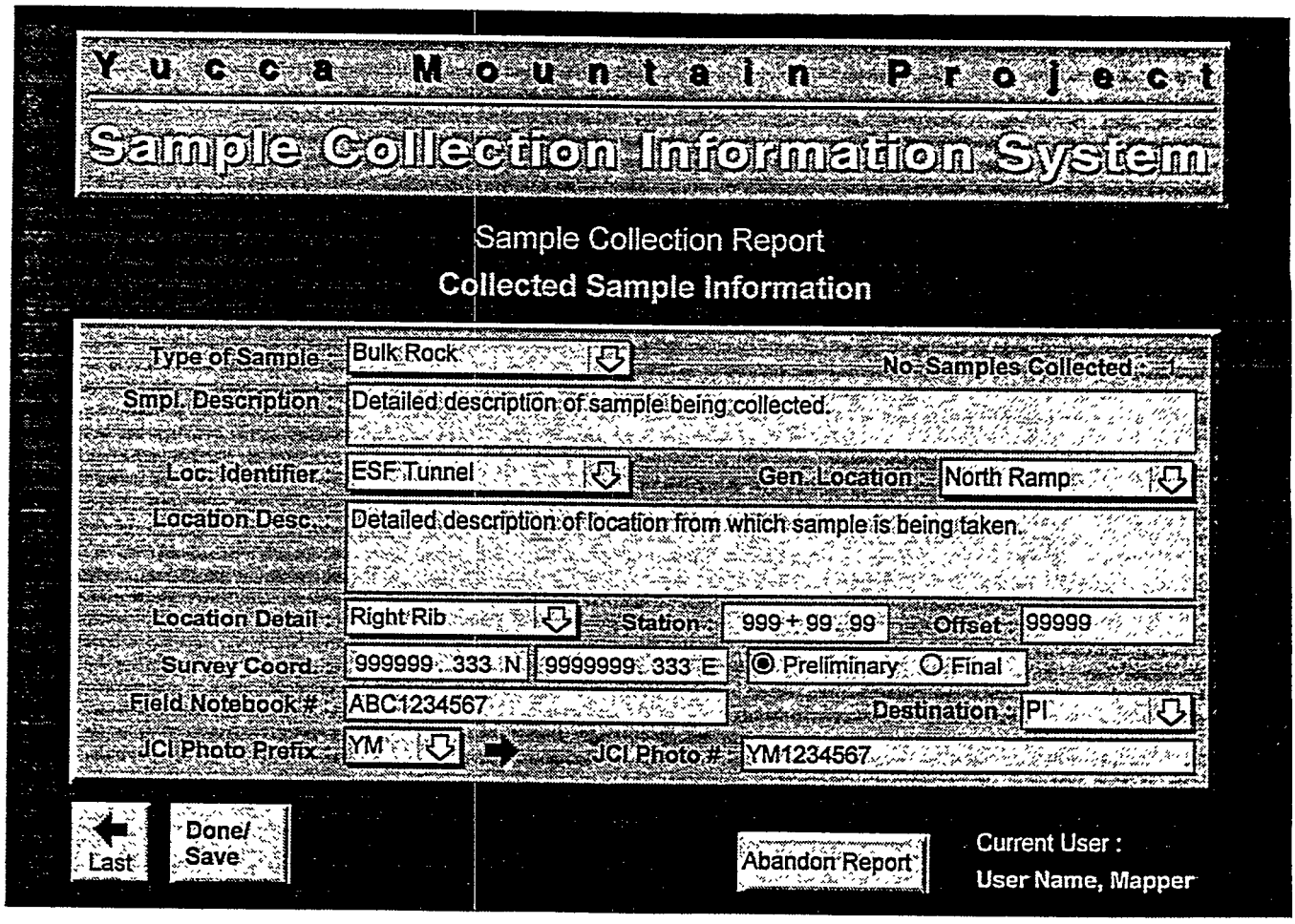

Yucca Mountain Project
Sample Collection Information System
Sample Collection Report
Sampling Instructions, Packaging, & Storage Requirements
Sample Characteristics :
Representative alteration features, especially in relation to representative variations in welding, lithophysae, breccia, and other lithologic variations.
Sp. Instructions : Record use of hydraulic splitter if used to obtain samples
Constraints : No sampling around spills of chemicals or water
Exp. Dimensions : N/A
Special Feature : N/A
Thermomechanical Units : UO
TCw
TSw2
Sample Type :
Samples Expected : 10 Total Samples
Collected to Date : 6
Storage Reqs. : Clean, dry secure area
Packaging : Tear-resistant, clear plastic bags
Orientation : "Up" arrow on samples. Describe orientation in sample decription.
Last
Next
Abandon Report
Current User :
User Name, Mapper

Creating a Sample Collection Report

The last Sample Collection Report screen is shown completed with example information below. This is the screen on which you will enter information about the sample you have collected or intend to collect.

There are several menu fields on this screen. They are identified by down-pointing arrows. Make selections from these screens by tabbing to them or selecting them with the mouse.

The Survey Coordinates fields and Station fields must be completed using the number of digits shown below. If there is an error in the way these fields are completed, the Alert screen shown opposite will appear when you select the **Done/Save** button.



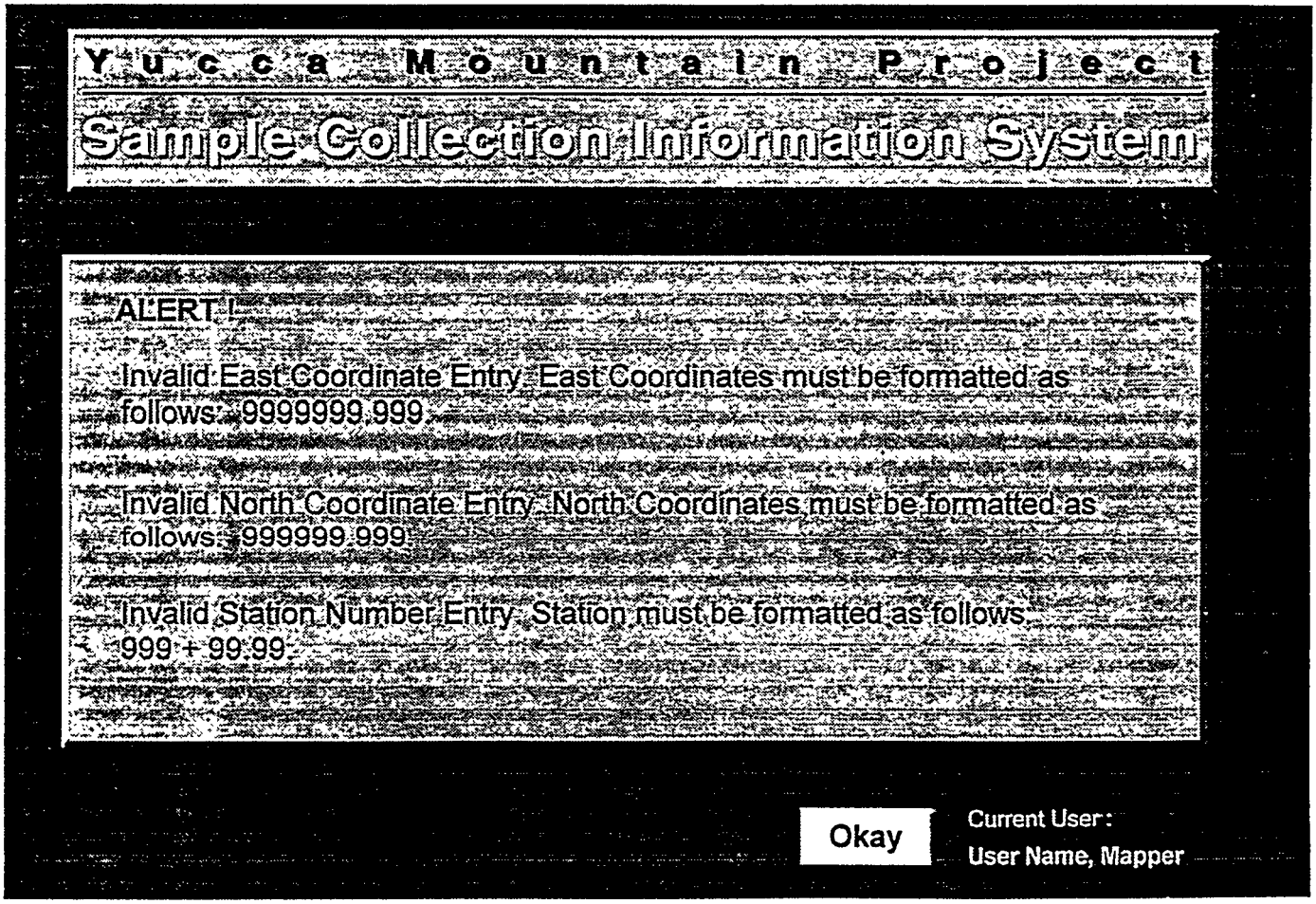
The Destination field is should contain the immediate recipient of the sample. The value in this field should be SMF (Sample Management Facility) unless the PI is present to pick up the sample or the PI has collected the sample him or herself, in which case the Destination should be PI.

The JCI Photo Prefix field provides a list of valid JCI Photo # Prefixes. If you make a selection from the menu, you may select the red arrow button to copy the valid JCI Photo prefix from the menu field to the JCI Photo # field.

After completing all the fields on this screen as completely as possible,

Select **Done/Save** to save the report, or

Select **Last** to go to the previous Sample Collection Report Screen.



Printing a New Sample Collection Report

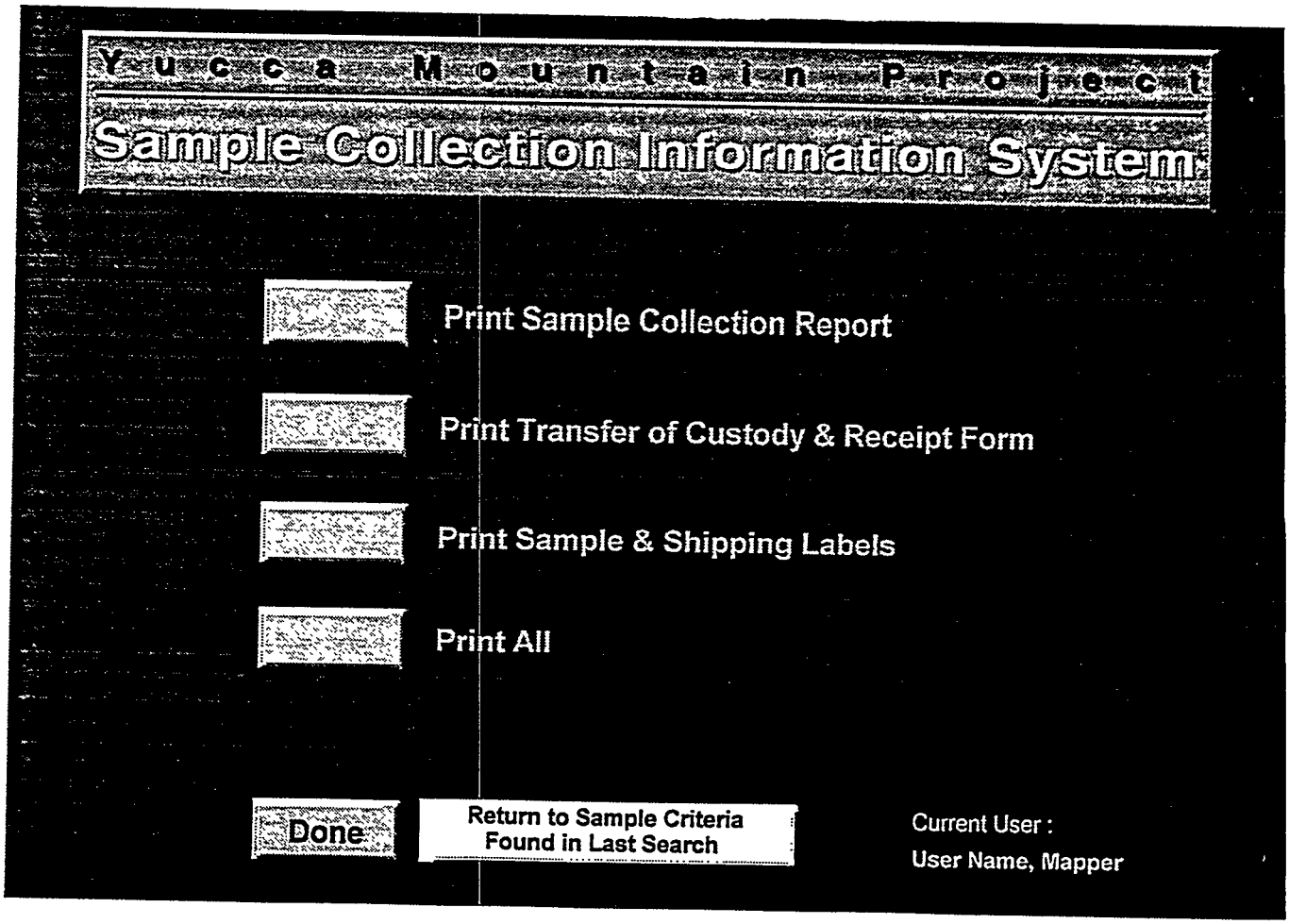
After completing the last Sample Collection Report Screen and selecting **Done/Save**, the printing options screen shown below appears.

You may print the Sample Collection Report, the Sample Tag and Shipping labels, or the Transfer of Custody and Receipt form from this screen. You may also choose the **Print All** button to print all three.

Examples of these reports are shown on the following pages.

After completing each print job, the system will return you to this screen.

Make your printing selection.
Select **Done** to return to the Mapper Main Menu.
Select **Return to Sample Criteria Found in Last Search** if you wish to create additional Sample Collection Reports based upon one of the sample criteria records you found in your last search.



YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
SAMPLE COLLECTION REPORT

General Information

Collection Date/Time : 7/24/94 19:54 **Sample Bar Code :** SCP123456789

Collector Name : User Name — USBR
Phone : (999) 999-9999 — Building 56, Room 2150, Denver Federal Center, Denver, CO 80225

Coll. Procedures : YAP-SII.4Q-2 LANL-EES-1-DP 101 LANL-YMP-QP-03.5
Study Plan : 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of YM

SCP Activity : 8.3.1.3.2.2.1 History of Mineralogy and Geochemical Alteration of YM

PI Name : Schon Levy — LANL
Phone : (505) 667-9504 — Mercury and Bikini Rd., Building SM-30 Los Alamos, NM 87545 Mail Stop : D462

Sampling Instructions, Packaging, & Storage

Sample Chars. : Representative alteration features, especially in relation to representative variations in welding, lithophysae, breccia, and other lithologic variations.

Thermo-mechanical Units : UO, TCw, TSw2

Special Features : N/A

Constraints : No sampling around spills of chemicals or water

Sp. Instructions : Record use of hydraulic splitter if used to obtain samples

Exp. Dimensions : N/A **Exp. # Samples :** 10 **# Collected to Date :** 1

Storage Reqs. : Clean, dry secure area

Packaging : Tear-resistant, clear plastic bags

Orientation : "Up" arrow on samples. Describe orientation in sample decription.

Sample Information

Type of Sample : Bulk Rock **No. Samples Collected :** 1

Smpl. Description : Detailed description of sample being collected.

Loc. Identifiers : ESF Tunnel **Gen. Location :** North Ramp **Loc. Detail :** Right Rib

Location Desc. : Detailed description of location from which sample is being taken.

Station : 999+99.99 **Offset :** 99999

Survey Coord. : 999999.333 N 9999999.333 E ◉ Preliminary ○ Final

Field Notebook : ABC1234567 **JCI Photo No. :** YM

Place Barcode Label Here

This form may be used in place of YMP-101-R2. Information presented here is provided in accordance with YAP-S11.4Q Section 5.1.1.

YMP-189-RO
06/06/94

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
TRANSFER OF CUSTODY AND RECEIPT FORM

1. Number of Samples/Containers Transferred : 1

2. Sample/Container Listing

SCP123456789

Storage Requirements :
Clean, dry secure area

Place Barcode Label Here

3. Ship To :

Schon Levy
LANL
Mercury and Bikini Rd.
Building SM-30 Los Alamos, NM 87545 Mail Stop : D462

Study Plan : 8.3.1.3.2.2 **Title :** History of Mineralogic and Geochemical Alteration of YM

Released By : User Name (Signature)
Organization : USBR
Address : Building 56, Room 2150
Denver Federal Center Denver, CO 80225
Mail Stop :
Date : 7/24/94
Phone : (999) 999-9999

Accepted By : Schon Levy (Signature)
Organization : LANL
Address : Mercury and Bikini Rd.
Building SM-30 Los Alamos, NM 87545
Mail Stop : D462
Date : 7/24/94
Phone : (505) 667-9504

Exhibit YAP-SII.4Q.2

Yucca Mountain Project
Geologic Mapping/Consolidated Sampling

Feature : N/A
Location : Right Rib
Station : 999+99.99
Offset : 99999
Description : Detailed description of sample being
Geologic Unit : UO
Date Collected : 7/24/94
Collected by : User Name
SMF Bar Code : SCP123456789

SMF BAR CODE LABEL

Yucca Mountain Project
Geologic Mapping/Consolidated Sampling

Feature : N/A
Location : Right Rib
Station : 999+99.99
Offset : 99999
Description : Detailed description of sample being
Geologic Unit : UO
Date Collected : 7/24/94
Collected by : User Name
SMF Bar Code : SCP123456789

SMF BAR CODE LABEL

PI/Org. : Schon Levy
LANL

Study Plan : 8.3.1.3.2.2
History of Mineralogic and Geochemical Alteration of YM

SMF BAR CODE LABEL

Ship To :
LANL
Mercury and Bikini Rd.
Building SM-30

Los Alamos NM 87545

Cost Code : Program :

PI/Org. : Schon Levy
LANL

Study Plan : 8.3.1.3.2.2
History of Mineralogic and Geochemical Alteration of YM

SMF BAR CODE LABEL

Ship To :
LANL
Mercury and Bikini Rd.
Building SM-30

Los Alamos NM 87545

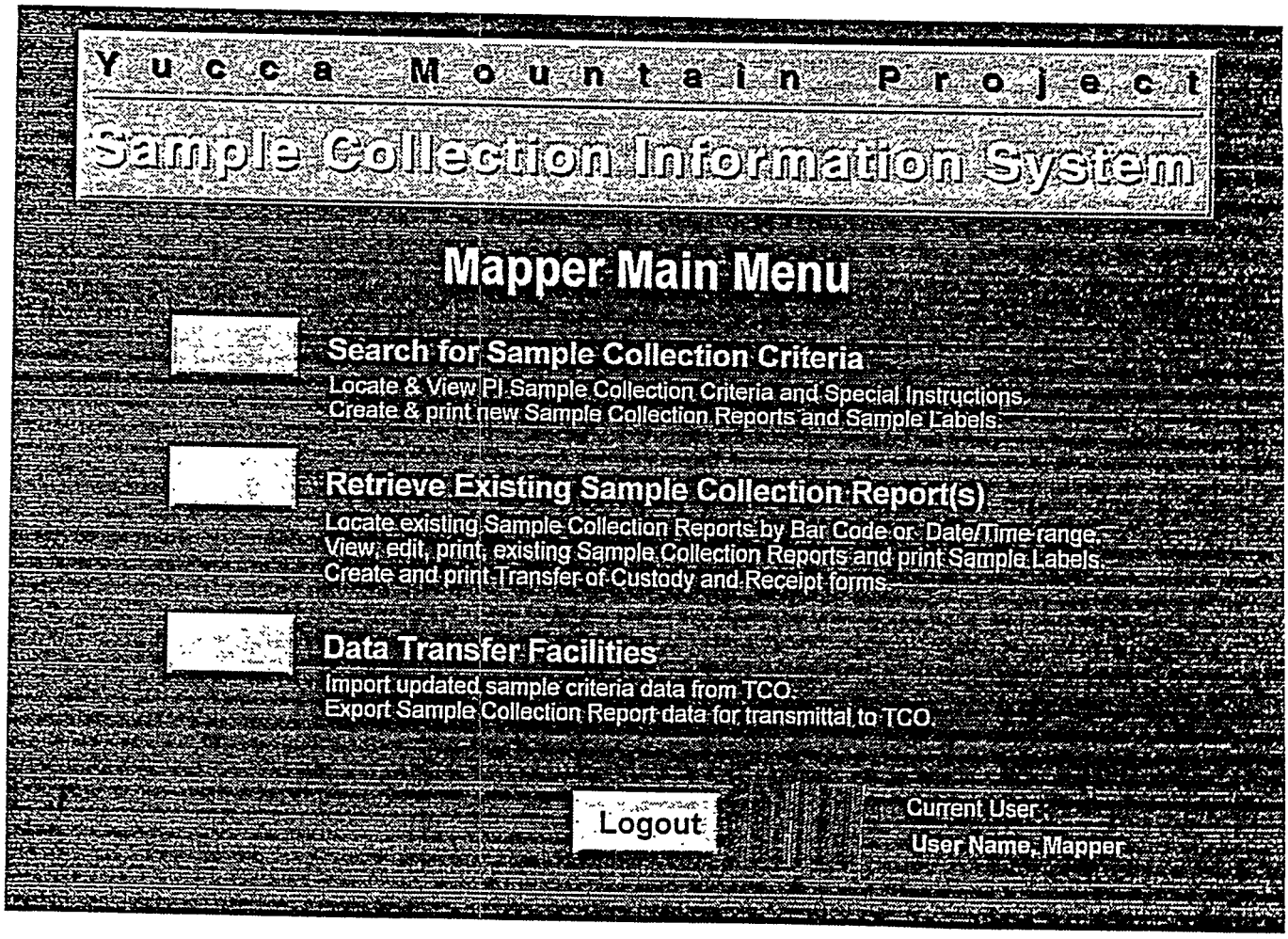
Cost Code : Program :

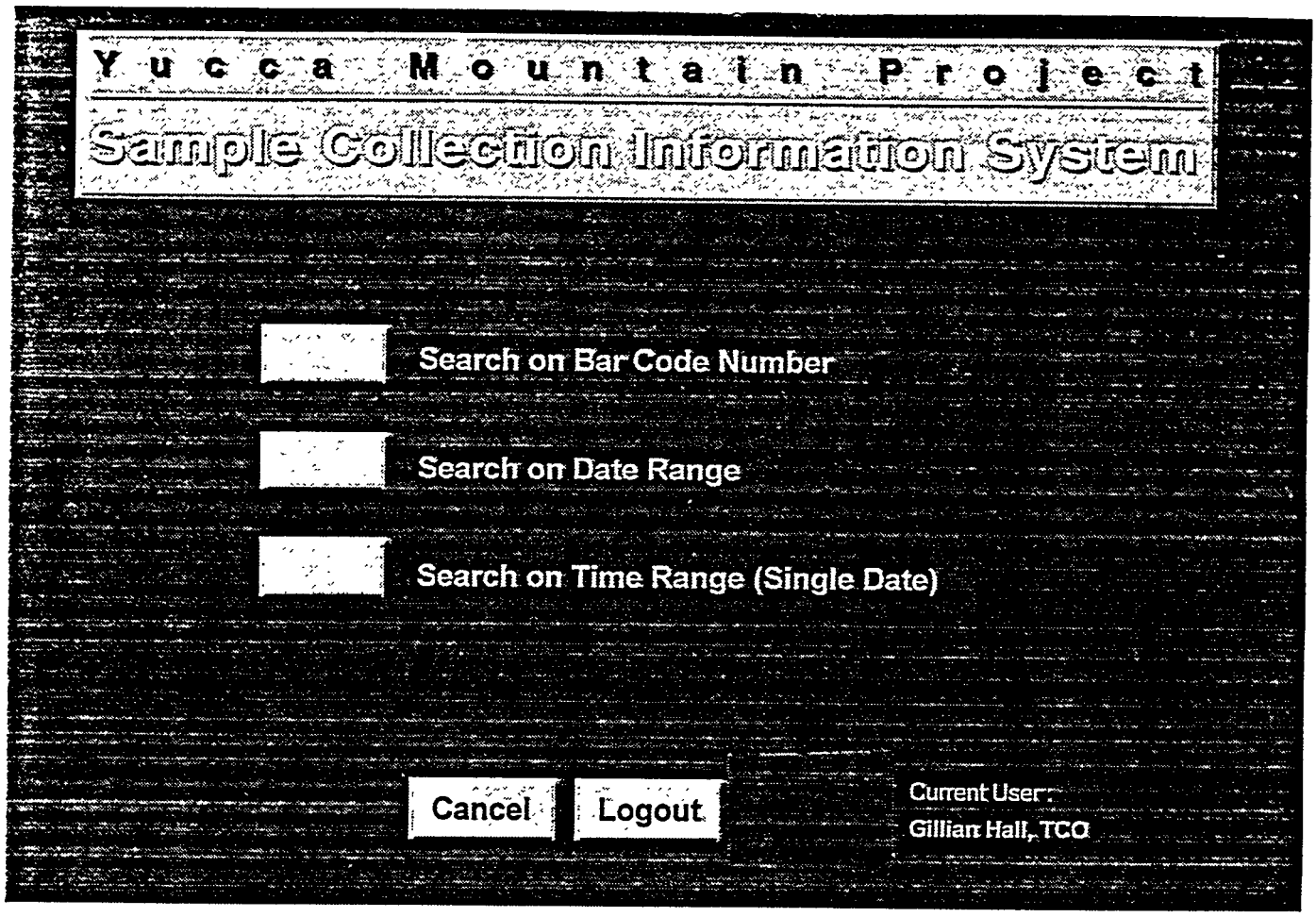
Retrieving Existing Sample Collection Reports

As shown below, there is an option on the Mapper Main Menu called **Retrieve Existing Sample Collection Report(s)**. This option allows you to search for Sample Collection Reports based upon Bar Code Number, Date Range, or Time Range (on a single day).

Select **Retrieve Existing Sample Collection Report(s)** and the screen shown opposite appears.

Select **Search on Bar Code Number...**




Yucca Mountain Project
Sample Collection Information System
Search on Bar Code Number
Search on Date Range
Search on Time Range (Single Date)
Cancel
Logout
Current User:
Gillian Hall, TCO

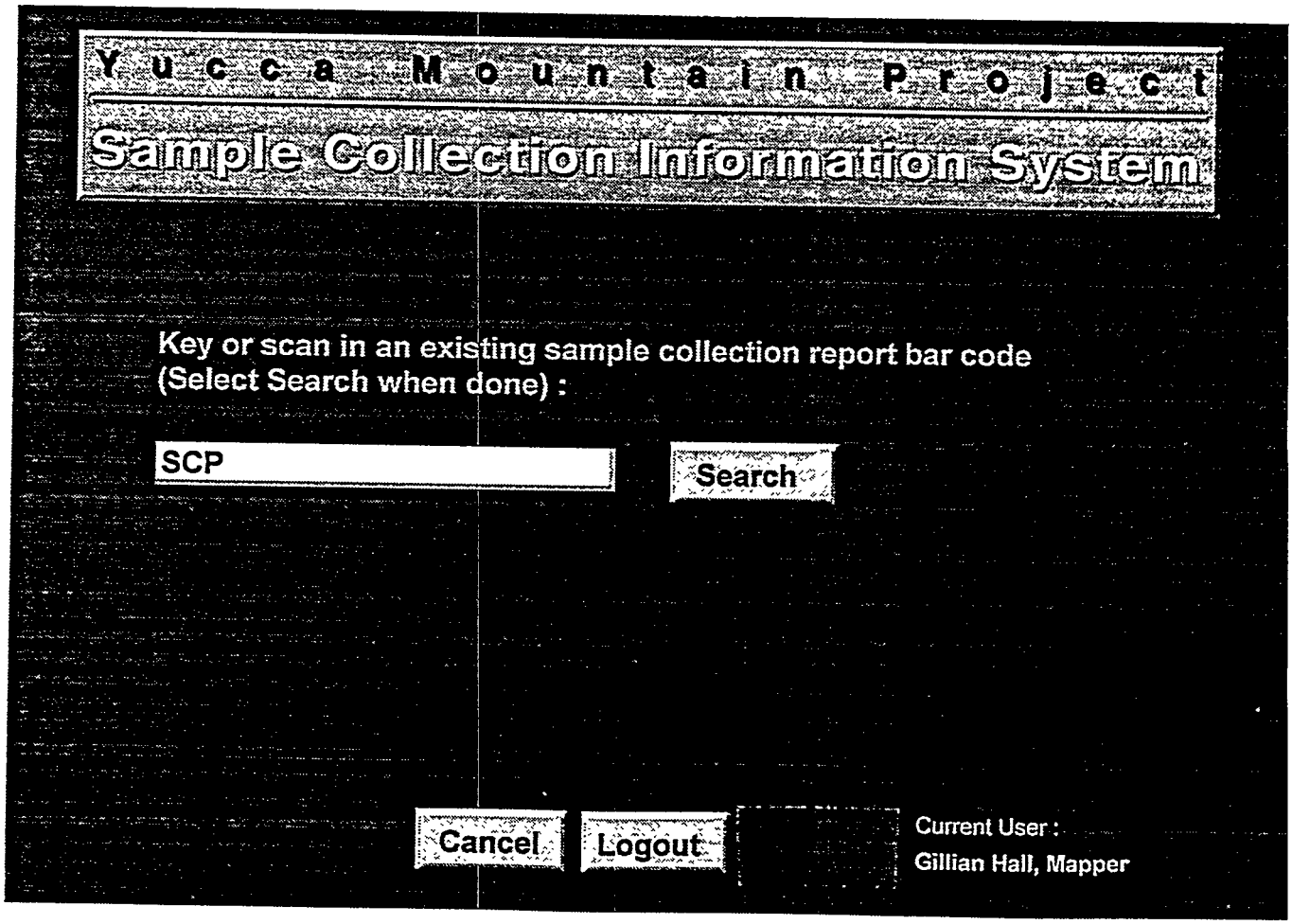
Retrieving Existing Sample Collection Reports

When the **Search on Bar Code Number** button is selected from the Retrieve Existing Sample Collection Report Screens, you are prompted for a bar code number.

Enter the balance of the bar code you are looking for (the first three letters, SCP, are automatically entered for you as shown below).

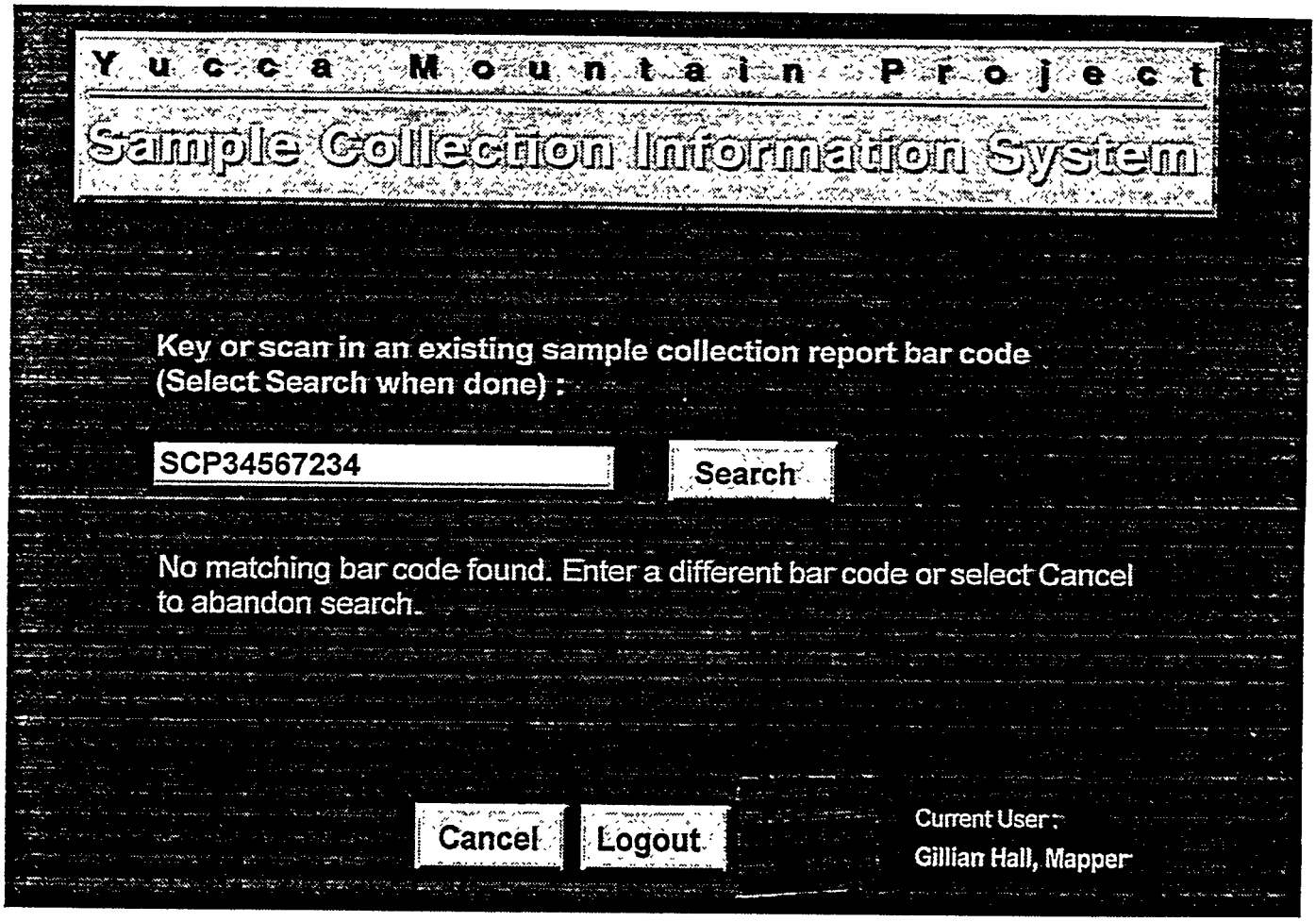
You may select **Cancel** to return to the Retrieve Existing Sample Collection Report screen, or... Select **Search** to search for the entered bar code number.

If there is no matching Sample Collection Report, the message shown on the opposite page will appear.



If there is a Sample Collection Report record in the system with a number matching the one you are searching on, the first screen of that Sample Collection Report will appear.

You may edit this Sample Collection Report and produced printed reports just as when you are creating a new Sample Collection Report.



Retrieving Existing Sample Collection Reports

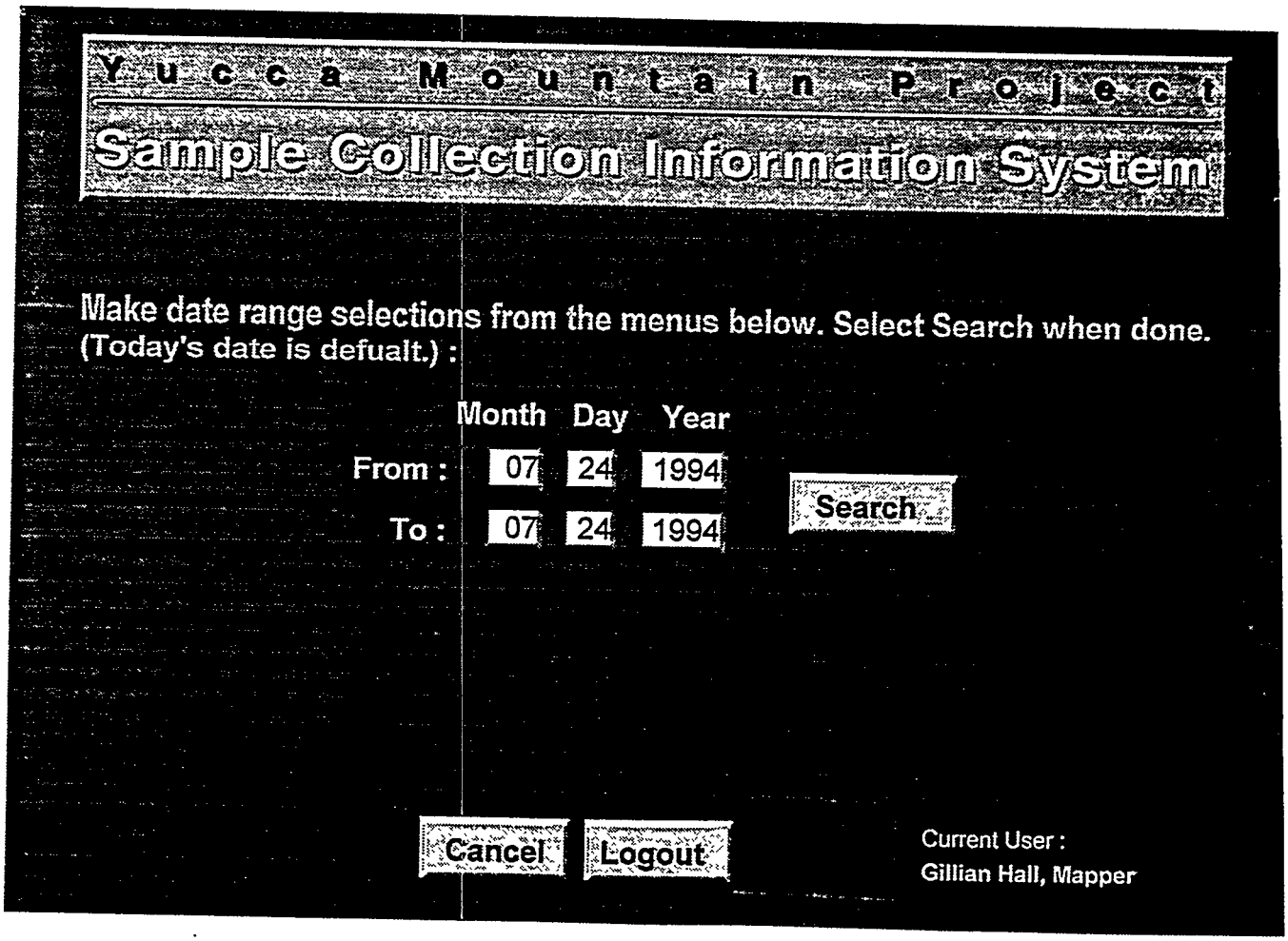
When the **Search on Date Range** button is selected from the Retrieve Existing Sample Collection Report Screens, the date range screen shown below appears. The dates are fields default to today's date.

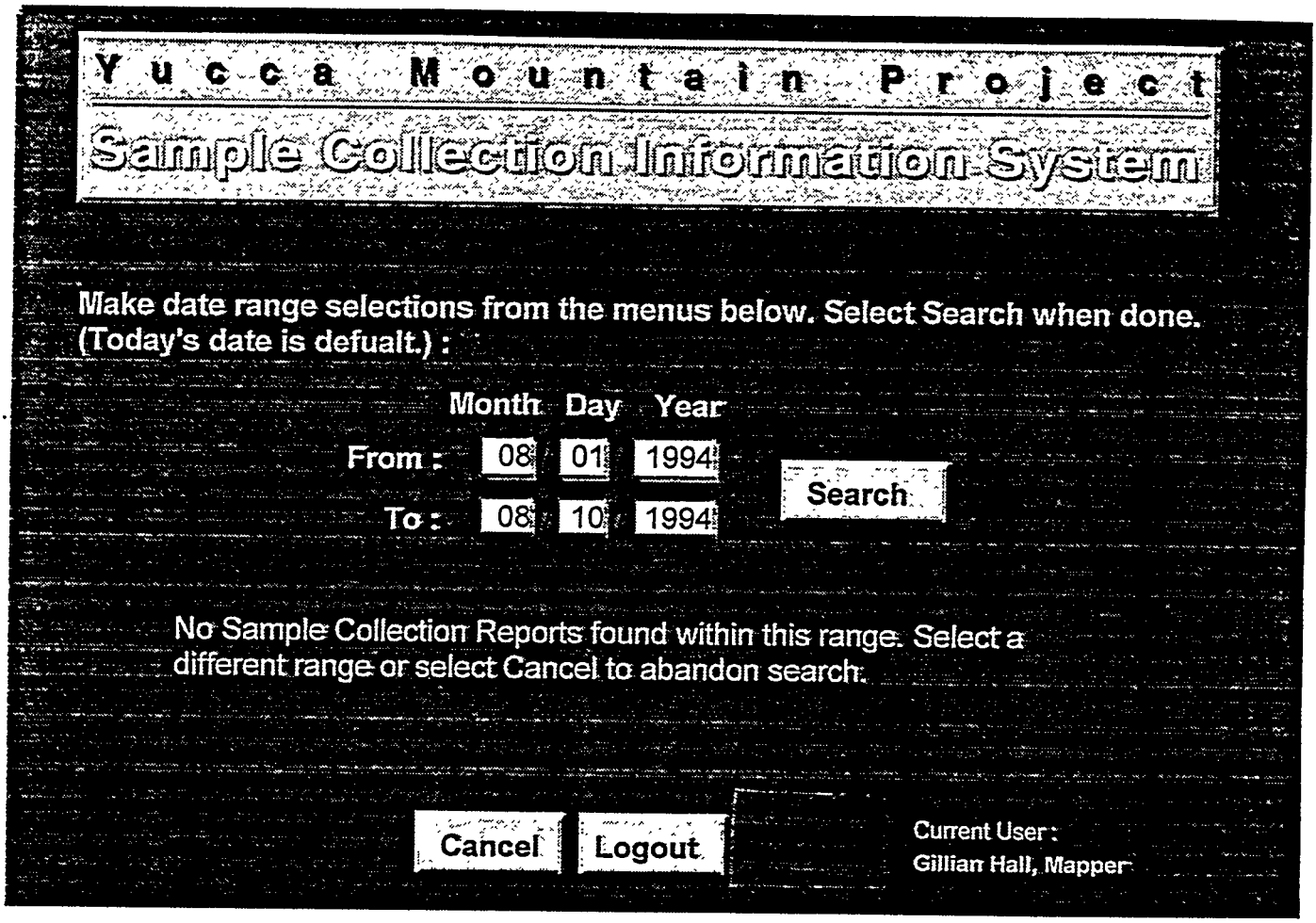
Each field on this screen is a menu.

Make your date range selections by clicking (using the mouse) on each field or by tabbing to the field and using the arrow and enter keys to make selections.

You may select **Cancel** to return to the Retrieve Existing Sample Collection Report screen, or... Select **Search** to search for Sample Collections reports created within the date range specified.

If there is no matching Sample Collection Report, the message shown on the opposite page will appear.




Yucca Mountain Project
Sample Collection Information System
Make date range selections from the menus below. Select Search when done.
(Today's date is defualt.) :
Month Day Year
From : 08 01 1994
To : 08 10 1994
Search
No Sample Collection Reports found within this range. Select a different range or select Cancel to abandon search.
Cancel
Logout
Current User :
Gillian Hall, Mapper

Retrieving Existing Sample Collection Reports

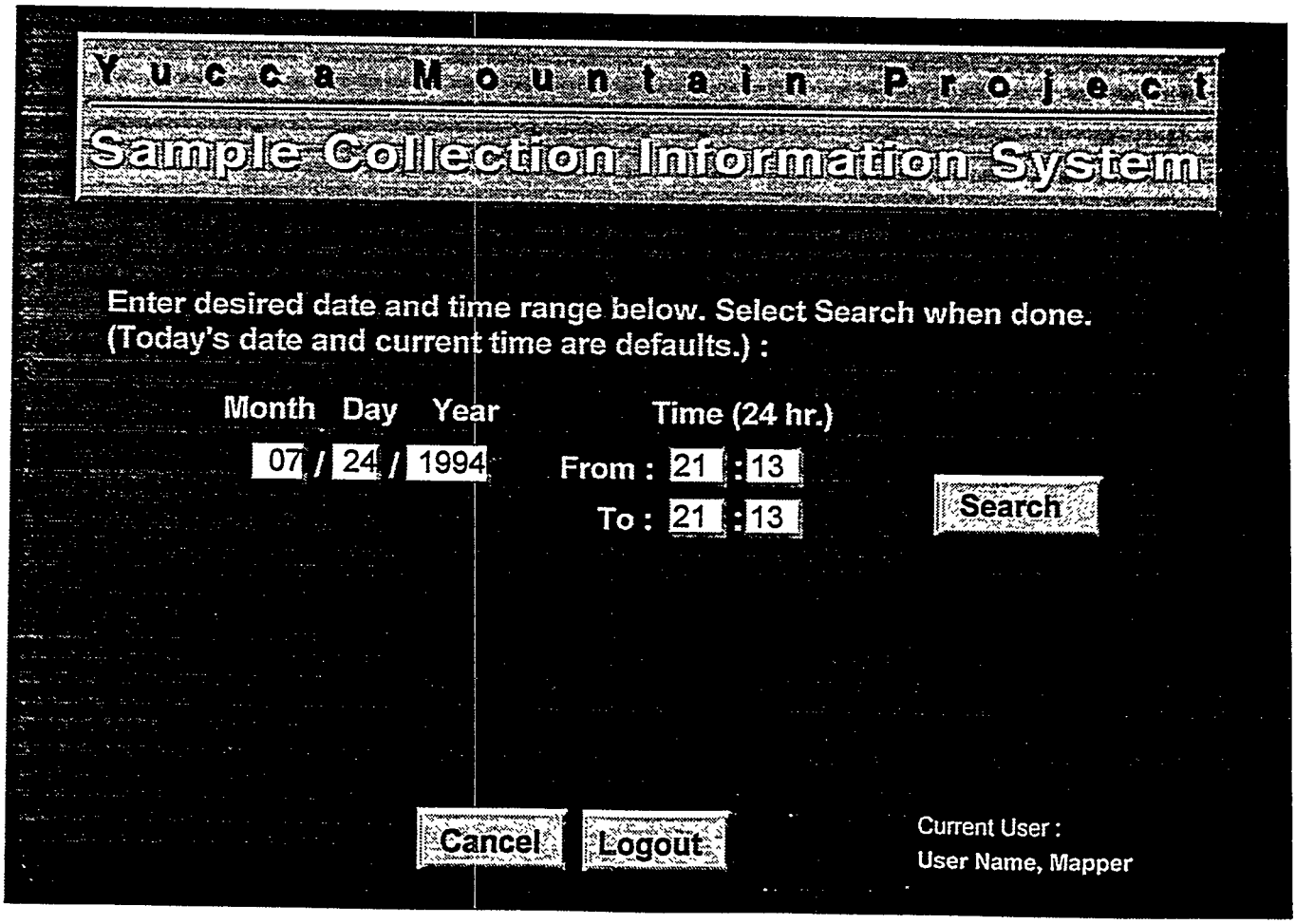
When the **Search on Time Range (Single Date)** button is selected from the Retrieve Existing Sample Collection Report Screens, the time range screen shown below appears. The date fields default to today's date, and the time fields default to the current time.

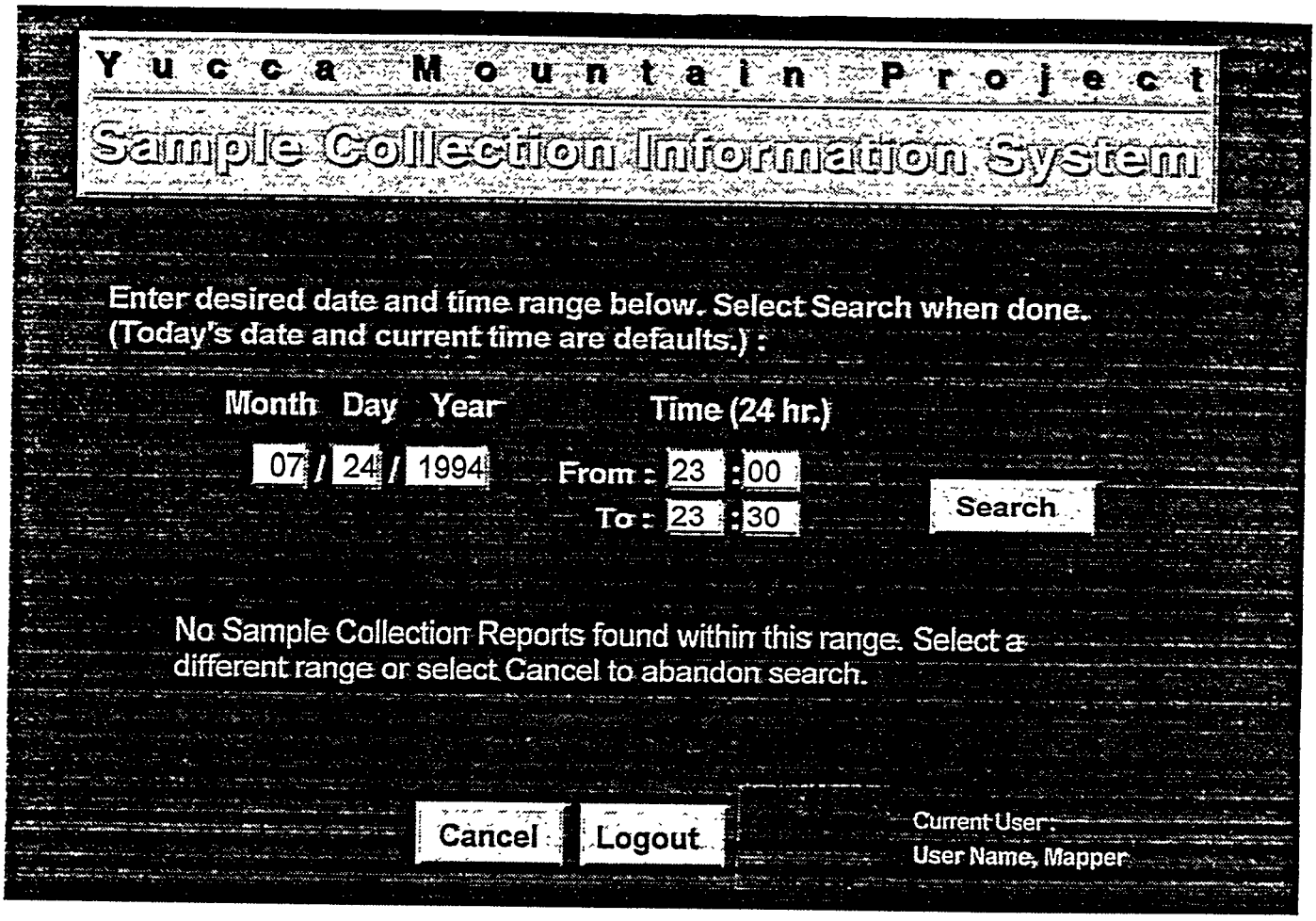
Each field on this screen is a menu.

Make your date and time range selections by clicking (using the mouse) on each field or by tabbing to the field and using the arrow and enter keys to make selections.

You may select **Cancel** to return to the Retrieve Existing Sample Collection Report screen, or... Select **Search** to search for Sample Collections reports created within the time range specified.

If there is no matching Sample Collection Report, the message shown on the opposite page will appear.




Yucca Mountain Project
Sample Collection Information System
Enter desired date and time range below. Select Search when done.
(Today's date and current time are defaults.) :
Month Day Year
07 / 24 / 1994
Time (24 hr.)
From : 23 : 00
To : 23 : 30
Search
No Sample Collection Reports found within this range. Select a different range or select Cancel to abandon search.
Cancel
Logout
Current User :
User Name, Mapper

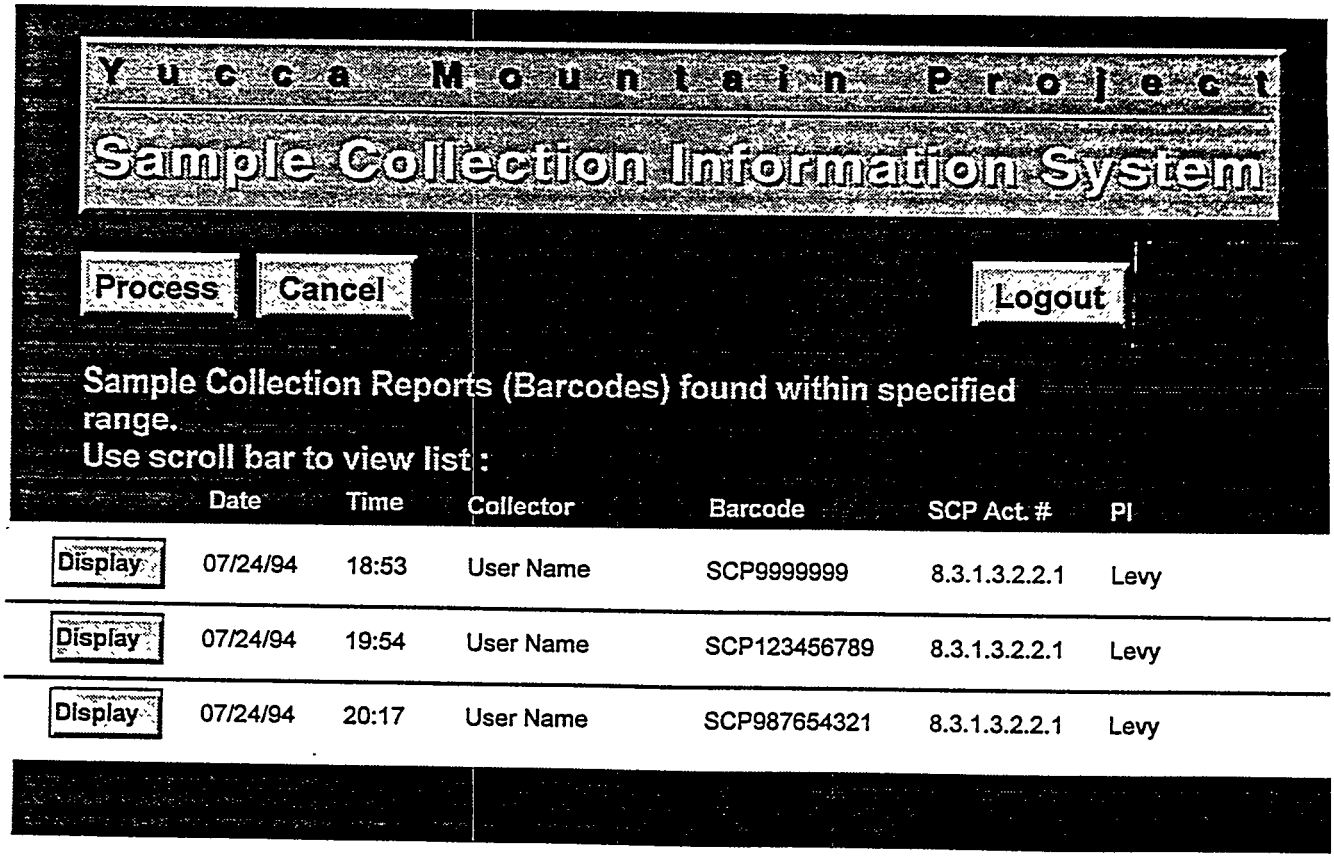
Retrieving Existing Sample Collection Reports

If a there are Sample Collection Reports matching the data or time range parameters you selected on the date range or time range screens, a screen like the one shown below will appear, displaying all of the matching Sample Collection Report bar codes.

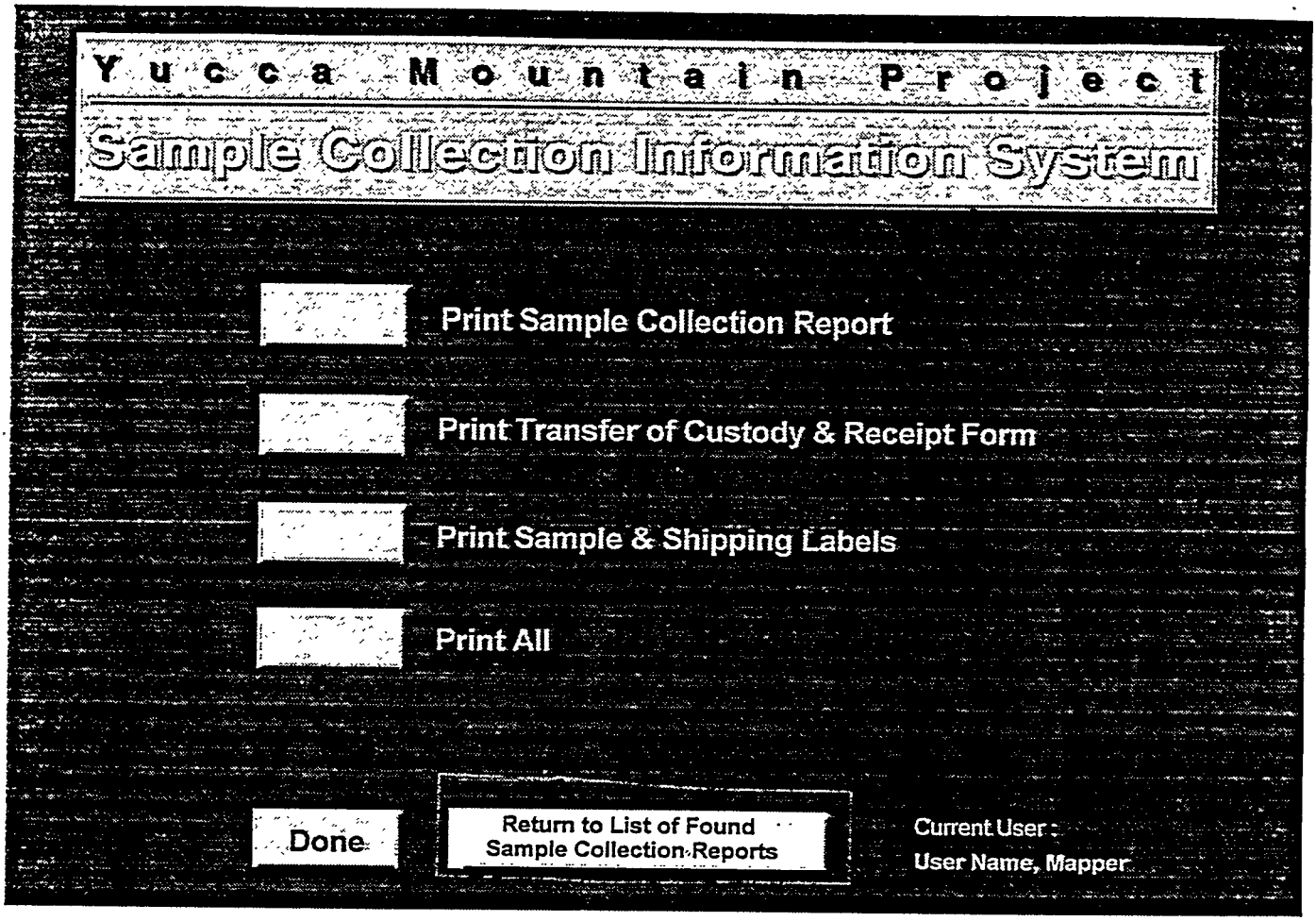
You may view and edit any one of the Sample Collection Reports listed by selecting the corresponding **Display** button.

Once you have finished viewing or editing a Sample Collection Report and have selected **Done/Save** on the last Sample Collection Report screen, the printing options screen shown opposite will appear. From this screen you can print reports for the specific Sample Collection Report you have been viewing.

Select **Done** on the printing options screen to return to the Mapper Main Menu, or...
Select **Return to List of Found Sample Collection Reports** to go back to the screen shown below.



	Date	Time	Collector	Barcode	SCP Act. #	PI
Display	07/24/94	18:53	User Name	SCP9999999	8.3.1.3.2.2.1	Levy
Display	07/24/94	19:54	User Name	SCP123456789	8.3.1.3.2.2.1	Levy
Display	07/24/94	20:17	User Name	SCP987654321	8.3.1.3.2.2.1	Levy


Yucca Mountain Project
Sample Collection Information System
Print Sample Collection Report
Print Transfer of Custody & Receipt Form
Print Sample & Shipping Labels
Print All
Done
Return to List of Found Sample Collection Reports
Current User :
User Name, Mapper

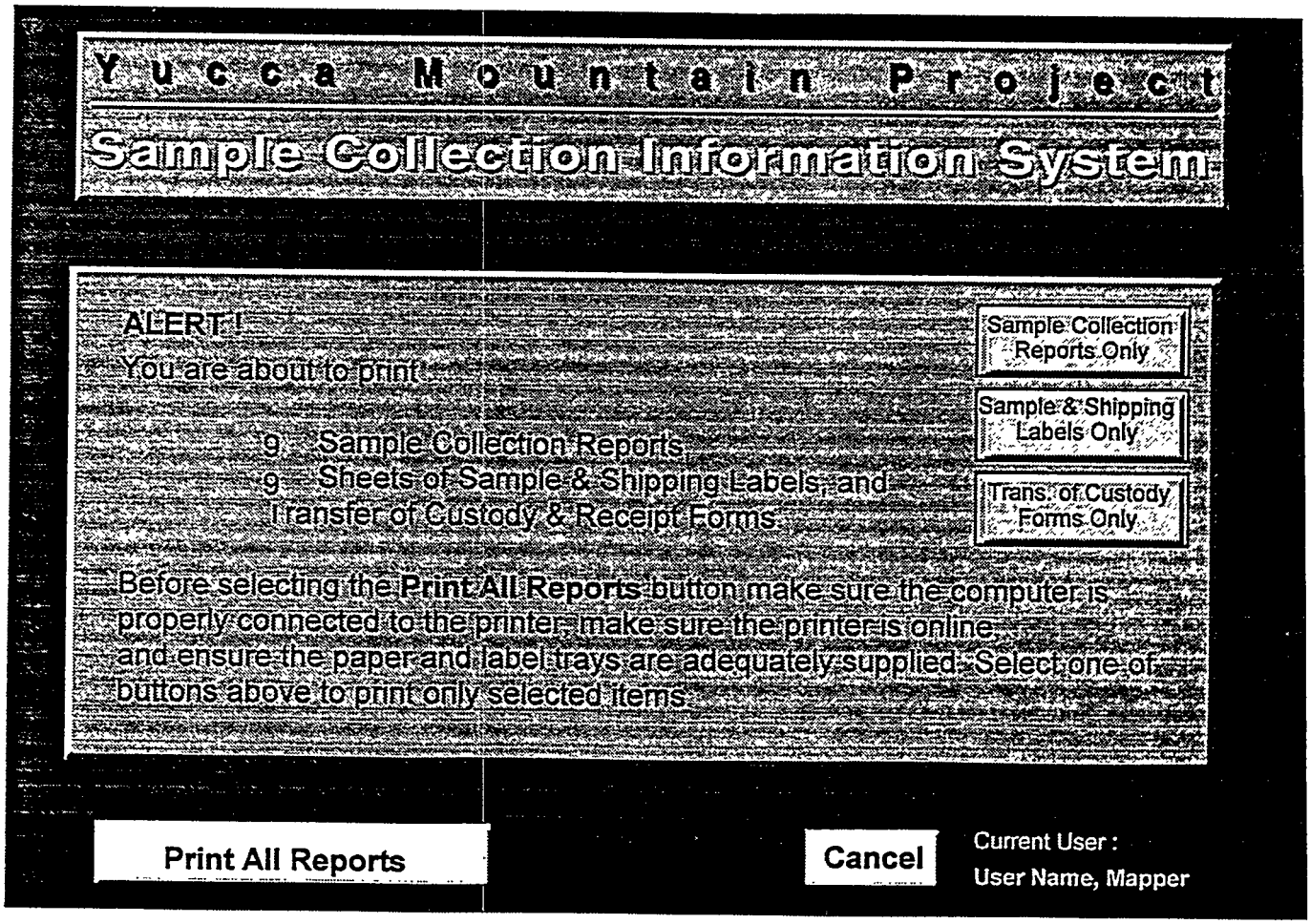
Printing Batch Reports

If a there are Sample Collection Reports matching the date or time range parameters you selected on the date range or time range screens, a screen like the one shown on Page 19 will appear. You may print reports for all Sample Collection Reports produced within the specified date or time range.

To initiate this "batch reporting" process, select the **Process** button on the screen on Page 19.

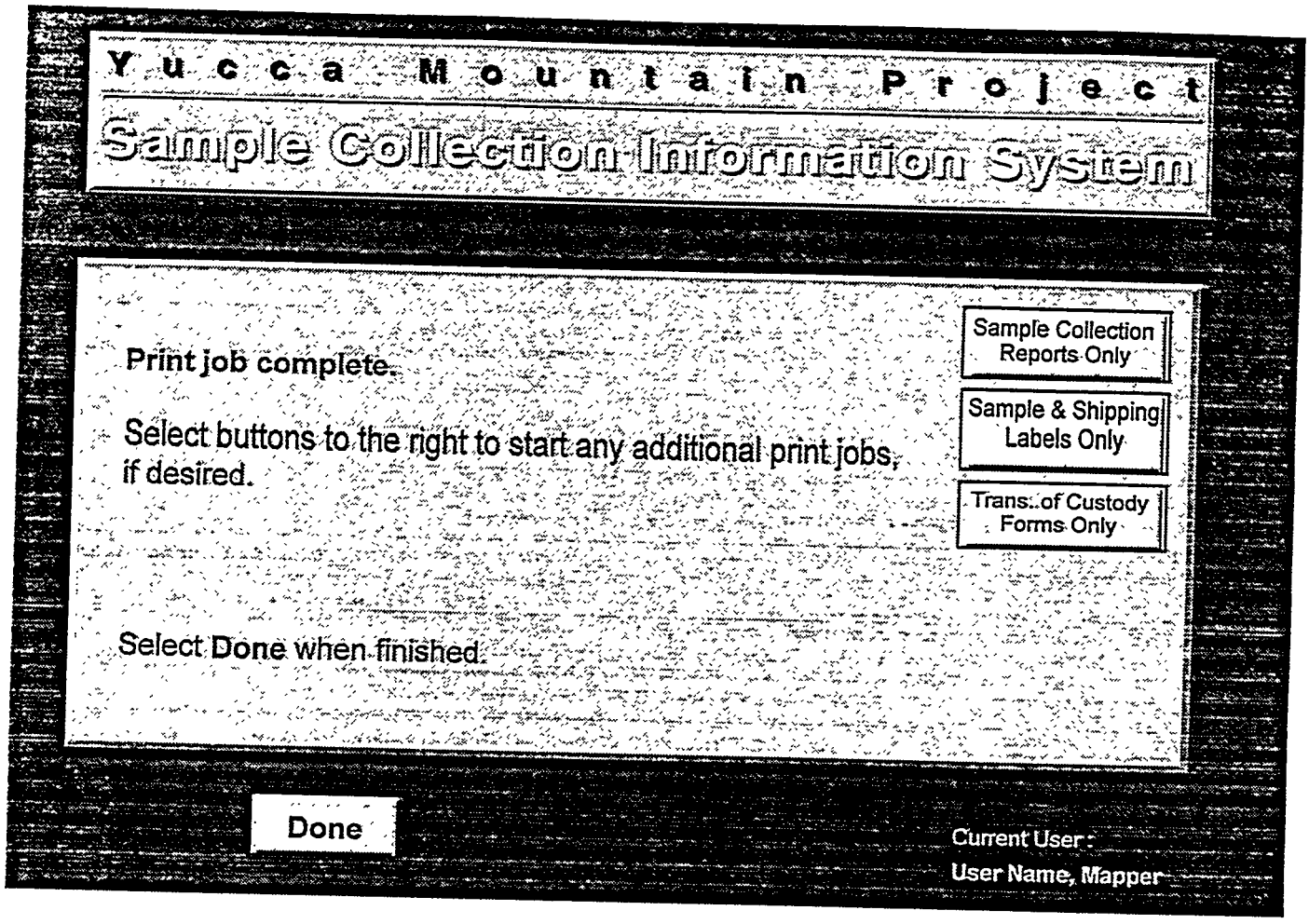
When the **Process** button is selected, the Alert screen shown below appears. This screen tells you the number of Sample Collection Reports found within the date or time range specified, and the number of label sheets and Sample Collection Reports that will be printed.

Select **Print All Reports** on the Alert screen shown below to print Sample Collection Reports, Sample Transfer of Custody and Reciept forms, and sample and shipping labels for all Sample Collection Report bar codes found in your date or time search. You may also choose to print each type of report separately using the buttons on the right side of the screen.



Following the completion of each "batch printing" job, the screen shown below will appear. From this screen, you may select additional print jobs. or select **Done** to return to the Mapper Main Menu.

An example of a completed "batch" Sample Transfer of Custody and Receipt form is shown on the next page.



YMP-189-RO
06/06/94

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
TRANSFER OF CUSTODY AND RECEIPT FORM

1. Number of Samples/Containers Transferred : 4

2. Sample/Container Listing

SCP987650
Storage Requirements :
Clean, dry secure area.

Place Barcode Label Here

SCP654
Storage Requirements :
Clean, dry secure area.

Place Barcode Label Here

SCP850234
Storage Requirements :
Clean, dry secure area.

Place Barcode Label Here

SCP98765
Storage Requirements :
Clean, dry secure area.

Place Barcode Label Here

3. Ship To :

Area 25
Sample Management Facility

Study Plan : 8.3.1.3.2.1 Title : Mineralogy, Petrology, and Chemistry Transport Pathways

Released By : Gillian Hall
Organization : Computer Applications Group, Inc.
Address : 13800 NE Merchant Rd.
Carlton, OR 97111 Mail Stop :
Phone : (602) 839-3557

(Signature)

Date : 7/24/94

Accepted By :
Organization : Area 25
Address : Sample Management Facility (SMF)
Phone :

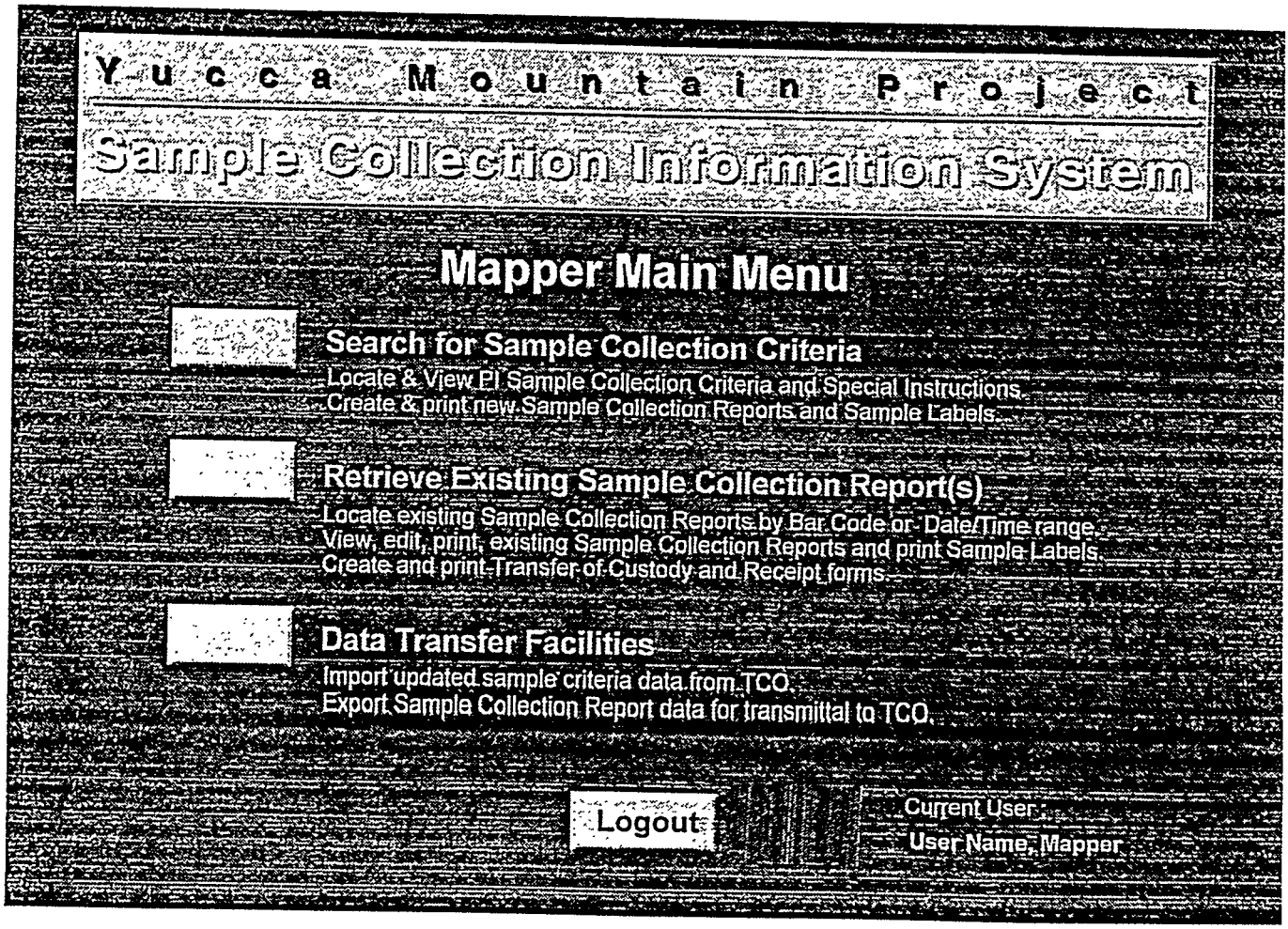
(Signature)

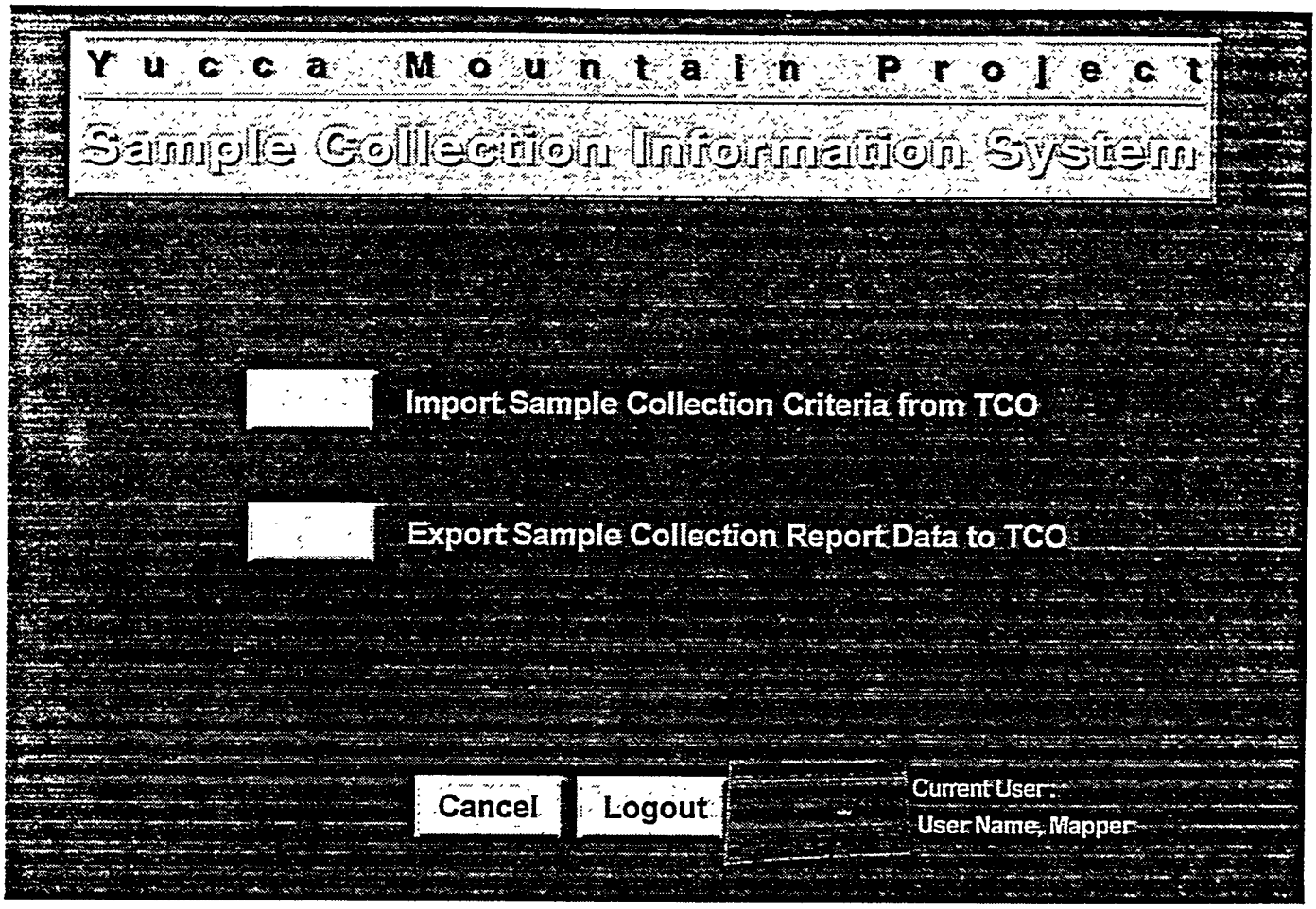
Date : 7/24/94

Performing Data Imports and Exports

As shown below, there is an option on the Mapper Main Menu called **Data Transfer Facilities.** This option allows you to update the sample criteria in the system from a file provided by the TCO. In addition, it allows you to create a file containing all of the Sample Collection Reports created since the last export for transmittal to the TCO.

Select **Data Transfer Facilities** from the Mapper Main Menu and the screen shown opposite appears.



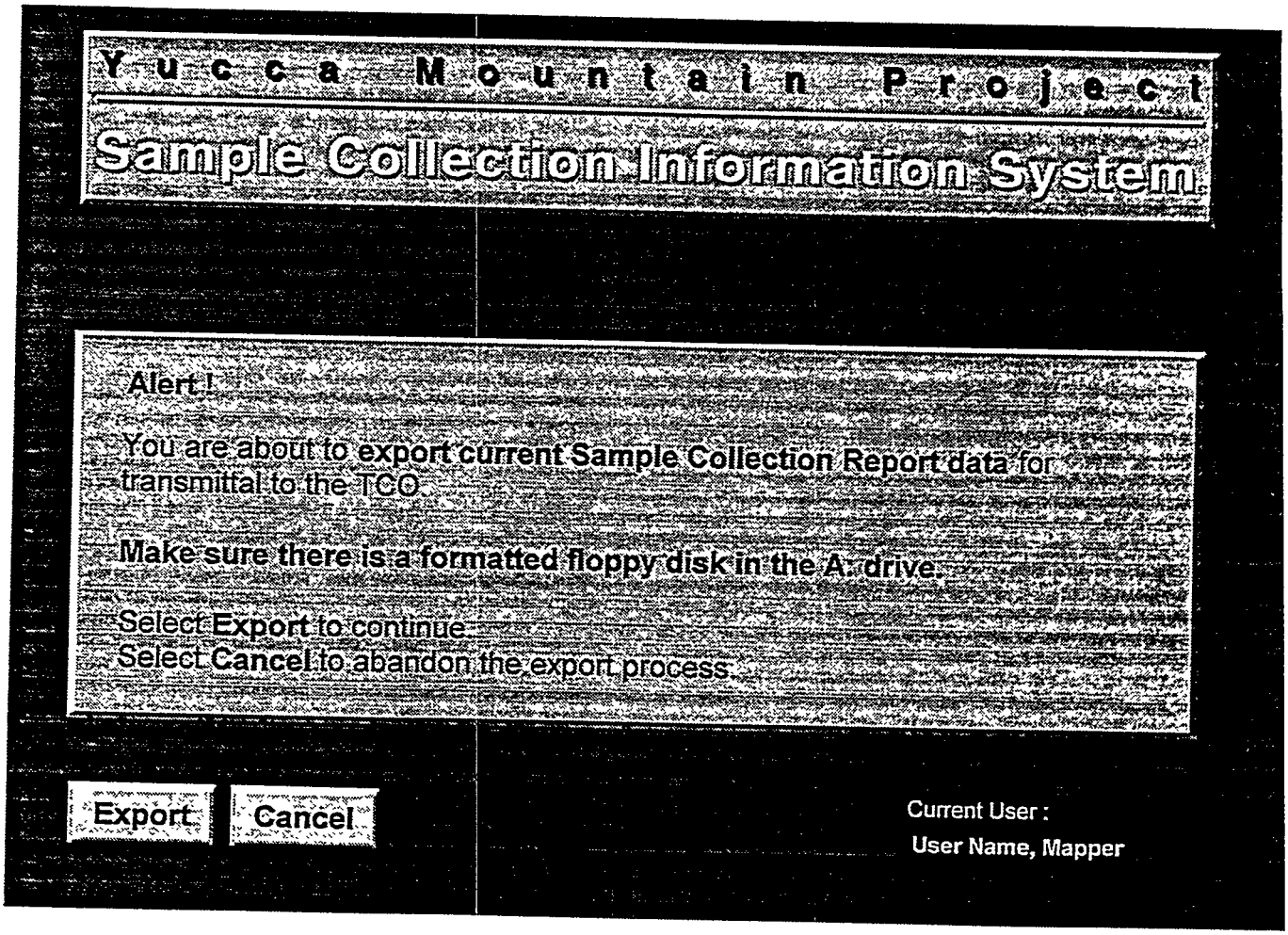

Yucca Mountain Project
Sample Collection Information System
Import Sample Collection Criteria from TCO
Export Sample Collection Report Data to TCO
Cancel
Logout
Current User:
User Name, Mapper

Performing Data Imports and Exports

When **Export Sample Collection Report Data to TCO** is selected from the Data Transfer Facilities screen, the Alert screen shown below appears providing you with information about the export process.

You may choose to abort the export process by selecting **Cancel** at this time.
To proceed with the export process, insert a blank formatted floppy disk into the A: drive, and select **Export**.

If the export process is successful, the screen shown opposite will appear after completion. If an error occurs during the export process (e.g., no floppy disk in the A: drive), a screen will appear stating the export process failed.



Yucca Mountain Project

Sample Collection Information System

EXPORT STATUS

6 new Sample Collection Reports have been created since the last export by Deirdre Boak on 07/23/94. These records have been exported to SAMPLES.FM on the A: drive.

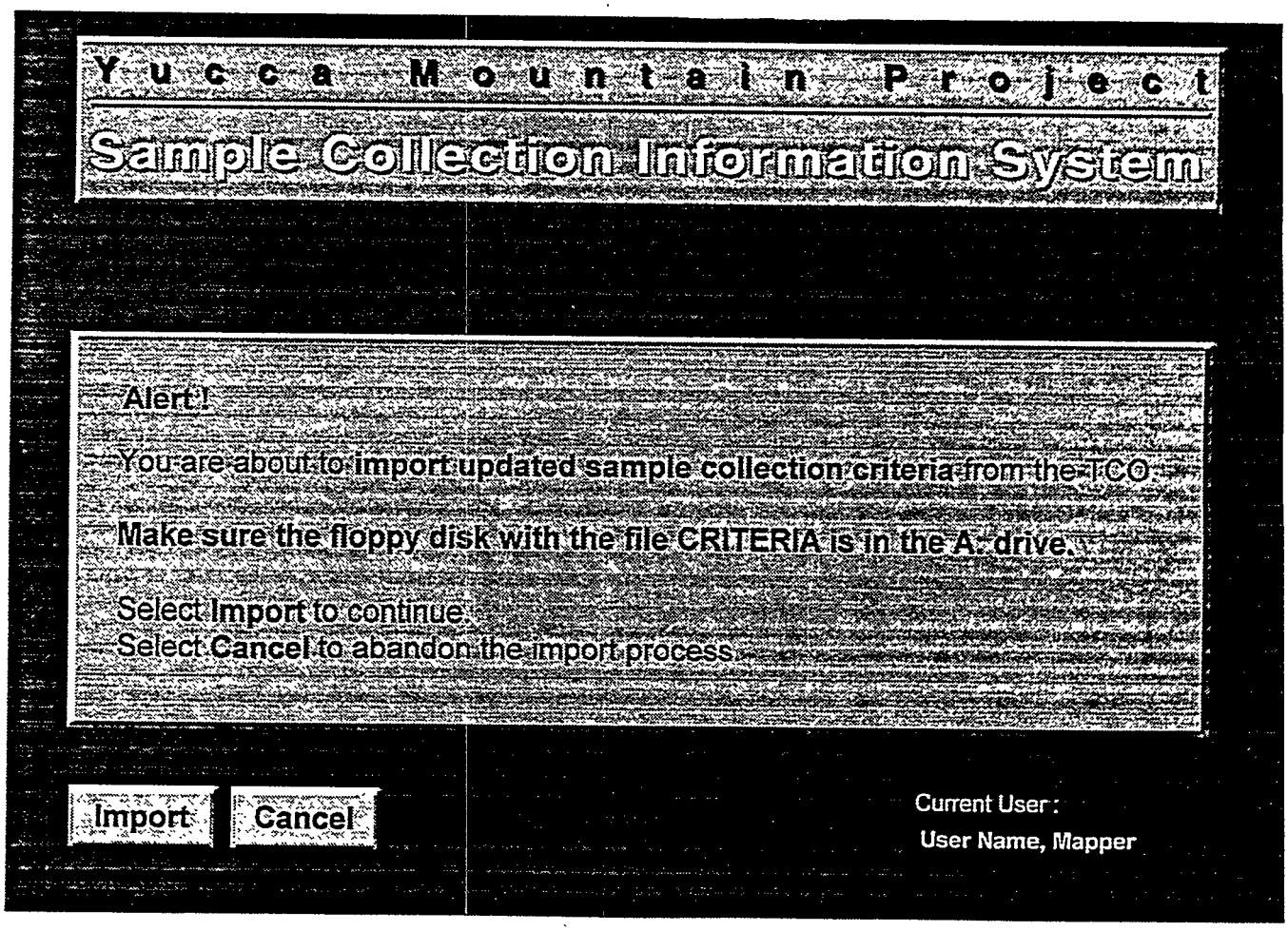
Okay

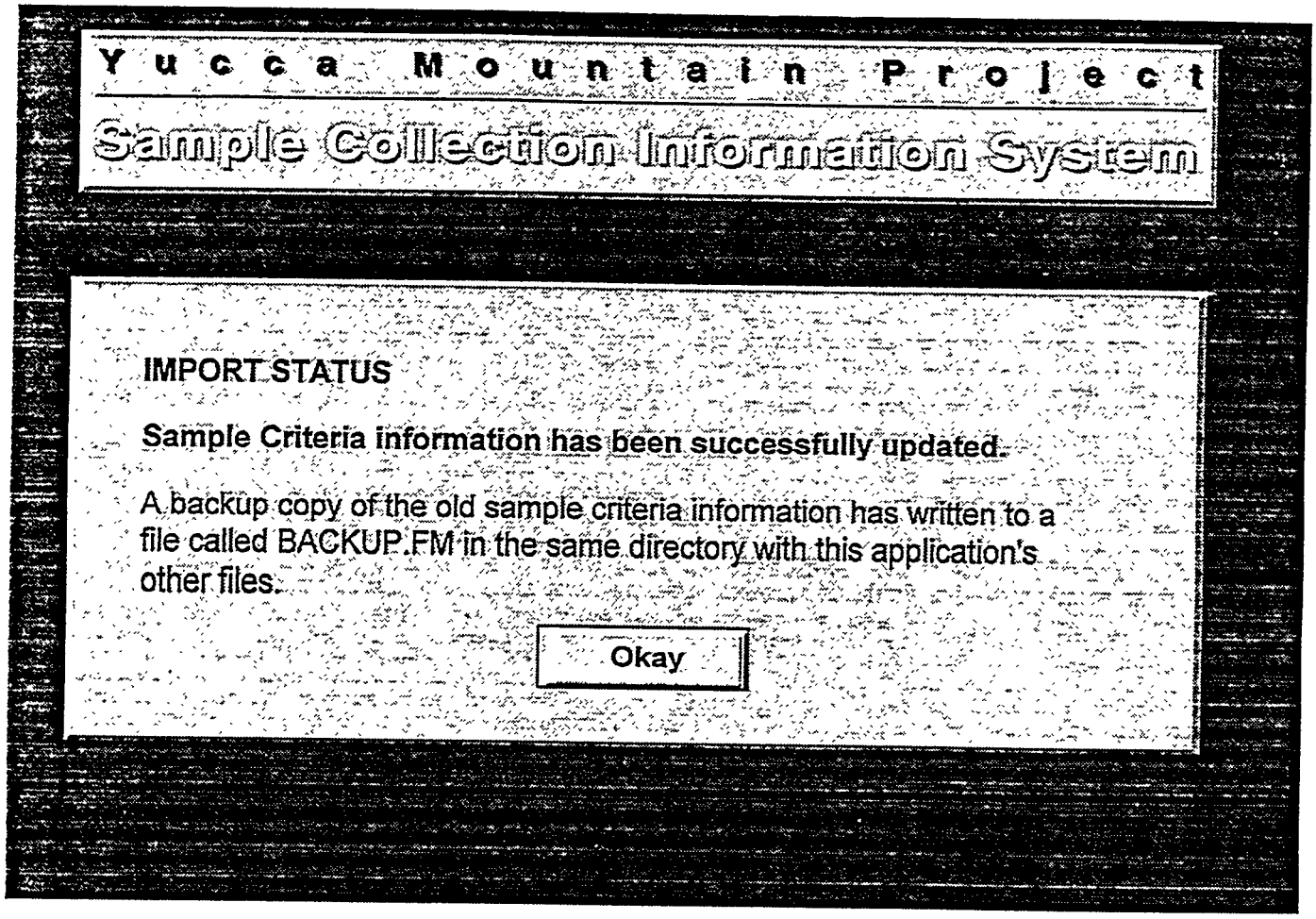
Performing Data Imports and Exports

When **Import Sample Collection Criteria from TCO** is selected from the Data Transfer Facilities screen, the Alert screen shown below appears providing you with information about the import process.

You may choose to abort the import process by selecting **Cancel** at this time.
To proceed with the import process, insert a floppy disk containing the file CRITERIA.FM provided by the TCO into the A: drive. Then select **Import.**

If the import process is successful, the screen shown opposite will appear after completion. If an error occurs during the import process (e.g., no floppy disk in the A: drive, unable to locate CRITERIA.FM), a screen will appear stating the import process failed.




Yucca Mountain Project
Sample Collection Information System
IMPORT STATUS
Sample Criteria information has been successfully updated.
A backup copy of the old sample criteria information has written to a file called BACKUP.FM in the same directory with this application's other files.
Okay

Computer Applications Group, Inc. FAX

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall

FAX: 602-839-3668
Voice: 602-839-3557

To: Keith Degner and Alan Mitchell
Re: Sample Collection Information System & Mapper User Manual
Date: 7-26-94
Pages: 1

You should receive a Fed Exp box from me Wed morning by around 10:30am. The box contains three copies of the Mapper User Manual. Unfortunately, I sent the manual before I made the change to the Sample Collection Report (i.e., removing Thermomechanical Units from the report), so the sample report in the manual shows Thermomechanical Units. This can be fixed in the next version of the manual, as I imagine there will probably be other changes requested following Steve Beason's beta testing.

I found a problem related to the fix I did on printing a Sample Transfer of Custody report for one sample only. The problem is now fixed, but I'll need to modem the updated file COLLRPT.FM to you in the morning. Call me when you are ready to receive it. It is important that Steve Beason receive this updated version of COLLRPT.FM for his beta testing.

Computer Applications Group, Inc. **FAX**

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall FAX: 602-839-3668
Voice: 602-839-3557

To: Keith Degner and Alan Mitchell
Re: Sample Collection Information System & Mapper User Manual
Date: 7-26-94
Pages: 2

I was not able to make the Fed Exp deadline last night with the Mapper User Manual. I am faxing it to you in about an hour from now (12:00). I am sure the screen shots won't reproduce well with the fax machine, but you will at least have something to go over with Steve Beason.

I had the Mapper User Manual copied double-sided onto thick paper and spiral bound this morning. I sent three copies to you by Fed Exp (one for you and Alan, one for Deirdre, and one for Steve Beason). You will receive them Wednesday. Bear in mind that this is a brief tutorial only. It should be sufficient for mapper users.

I need to modem the updated application to you. The following problems have been fixed in the latest version :

1) The Sample Transfer of Custody and Receipt form now prints properly singly or in batch mode.
2) Records may now be deleted properly in peripheral files.
3) I redesigned several scripts to ensure that all printing functions are more solid. The problem with printing the Sample Transfer of Custody and Receipt form was a symptom of a bigger problem which I've now fixed.
4) I removed all Exit buttons except on the login screen. This forces users to logout before exiting. I also added an Exit warning screen (like the Abandon warning screen). I decided the Exit button may be dangerous for inexperienced users who may select it, not realizing they will be immediately dumped out of the application and out of FileMaker Pro. Now they have a chance to change their minds.
5) I added a feature to the Export to TCO function which will allow the TCO to recieve updates on the number samples have been collected for each Sample Criteria as a direct dump into the TCO copy of COLLECT.FM. This may be important later on when we complete the TCO reporting facilities.

I will send the application with COLLECT.FM completely empty, so that you may import your current, complete data into this file. To import, follow these steps:

1) User File Manager to rename the old COLLECT.FM file containing your current data to COLLECT2.FM.
2) Go into FileMaker and open the new COLLECT.FM (**not** COLLECT2.FM).
3) Select File.
4) Select Import/Export.
5) Select Import Records.
6) Select COLLECT2.FM (so that it is displayed in the small File Name: box.
7) Select OK.
8) Select the Match Fields button, and make sure the Add new records radio button is selected.
9) Select OK. The records in COLLECT2.FM will then be added to COLLECT.FM.

Next, you should reserialize the records in COLLECT.FM and initialize the Number Collected to Date field. I've created a script which will do this for you. To run this script, open the new COLLECT.FM, select Scripts, select Initialize File. It is important that this script not be run again down the road when the Number Collected to Date fields have been incremented, so follow these steps to remove it from the menu:

1) Select Scripts.
2) Select SriptMaker...
3) Select Initialize File from the list (it's at the very end).
4) Uncheck the Include in menu box.
5) Select Done.

Finally, when you turn the system over to Steve Beason, the COLLRPT.FM file should be emptied and a header record should be created and initialized. I created a scipt to do this too. To run the script, open COLLRPT.FM, select Scripts, select Initialize File. It is CRUCIAL that this script NOT be available to mappers after we deliver the system, so you MUST remove the script from the Scripts menu after you run it. Follow the instructions above to do this.

Give me a call if you have any questions or problems.

Gillian

Computer Applications Group, Inc. **FAX**

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall

FAX: 602-839-3668
Voice: 602-839-3557

To: Alan Mitchell
Re: Sample Collection and Tracking Database Project
Date: 7-19-94
Pages: 1

UPDATED VERSION...

This is an update to my previous fax. I did not include TCO reporting in the last version.

This is my current estimate of the time it will take to finish the job. I have broken the hours out into specific tasks as follows:

Task	Hours
1. Geologic/Thermomechanical Units Change	5
2. Import/Export Facilities for Both Mappers and TCO	4
3. Transfer of Custody Report (completion)	3
4. TCO User Interface (completion)	3
5. File Maintenance and Cleanup	3
6. Testing and Debugging	2
7. User Documentation (Tutorial)	5
8. Administrative and Technical Documentation	10
9. Changes Requested by USGS	15
10. Reporting Facilities for TCO	10
Total	**55**

My calculation puts my remaining hours at the conclusion of my last trip at 45 hours.
I have spent 30 hours on the project since then, leaving 15 hours. I anticipate spending these remaining 15 hours on items 1 through 4 above.

Computer Applications Group, Inc. **MEMO**

To: Deirdre Boak, Keith Degner, Jim Hall, Alan Mitchell, Fred Homuth, Ron Oliver, Debbie Edwards

From: Gillian Hall

Date: July 13, 1994

Subject: YMP Sample Collection Information System

Planning and Progress Report

Mapper Module Progress Report:

The Mapper Module of the YMP Sample Collection Information System entered the user testing, debugging, and fine tuning development phase July 5, 1994. Steve Beason has met with Keith Degner several times. Change requests emerging from those meetings were implemented and delivered on Tuesday, July 12, 1994. Mr. Beason remains enthusiastic about the application development effort. Keith Degner can provide a copy of the current version of the Mapper Module (a FileMaker Pro application consisting of 3 files, approx. 1 MB, PC and Mac compatible) to anyone who is interested in trying it out.

During meetings on July 12, 1994 with Keith Degner and Jim Hall, a new list of modifications and enhancement requests was generated (see attachment for complete list). These changes are being implemented as quickly as is feasible. It is anticipated that approximately half the Mapper Module items on this list will be completed and delivered by the afternoon of July, 13, while the balance of these items (with the exception of User and Administrator System Documentation) will be completed and delivered the week of July 18 by modem. This date may be adjusted if additional changes are requested or currently requested changes are modified. The projected delivery date of system documentation is August 1, 1994. Upon completion and/or clarification of the "Action Items" on the list, the Mapper Module will be ready for installation and use by mappers.

TCO Master Module Progress Report:

The attached "Action Items" list also details tasks involved in completing the TCO Module data entry, export, import, label generation, and reporting facilities. Keith Degner and myself are currently working on the data consistency and data input tasks on this list. Keith will also be handling other details of data integrity and completeness with regard to sample criterion.

Completion goals for the bulk of these tasks are longer-term than for tasks on the nearly complete Mapper Module. It is anticipated that development on the TCO Module will continue through July and into August. Import and export facilities required for theTCO Module to interoperate with the Mapper Module are of the highest priority following data integrity and completeness issues and are to be completed before user interface, reporting, and fine tuning activities.

Barring changes in user requirements for the TCO Module, the anticipated completion date for the TCO Module is September 1, 1994. This includes documentation, testing, and initial fine-tuning.

Completion of the TCO Module and its installation will mark the completion of the development phase of the YMP Sample Collection Information.

YPM Sample Collection Information System Change Requests
List Generated from discussions with K. Degner, D. Boak, and J. Hall on Tuesday, July 12, 1994

Action Items for TCO Module, YMP Sample Collection Information System :

Bring TCO Module field definitions into alignment with Mapper Module.

Import latest data into TCO Module.

Enter missing data resulting from earlier missing fields.

Integrate Mapper and TCO Modules for user as TCO Master Module.

Design Wall Tag to be printed blank in large quantities. Should mappers be able to print these from their systems?

Create "Print incomplete Sample Collection Report for each Sample Criteria" facility (Deirdre).

Implement export facility: Clarify which records should be eliminated from export to Mapper Module.

Implement import facility. Protect header record.

Create summary reports for TCO (Deirdre currently has several reports which must be included).

Create rudimentary user interface (navigation facility, script invokation, etc.)

Action Items for Mapper Module, YMP Sample Collection Information System :

Font compatibility - test installation of same font on multiple machines. Same appearance?

Label stock - need label material to test shipping label and sample tag label printing.

Change "Last Const. Station" on Sample Collection Report (SCR) to "Station".

JCI Photo # - Prefix field followed by a JCI Photo # field which takes Prefix and allows additional data entry.

When leaving data entry screen (Sample Information) for SCR, check the following field lengths when Next button is pressed :

Station	999 + 99.99
Coord N	999999.999
Coord E	9999999.999

If any length is not EXACTLY as above, present error dialogue screen with only one button: Return to Sample Information screen.

If there are no values entered on the Sample Selection Parameters screen, an FM dialogue is currently envoked when Search is selected. Make sure the FM dialogue is NEVER envoked.

Sample Transfer of Custody Report -

- Find all records whose destination is NOT "SMF", omit these records, sort by Study Plan #, print reports.
- Find all records whose destination is NOT "PI", omit these records, sor by PI Name and then by Study Plan #, print reports.
- Add options to print this report to ALL screens where print and process options appear.
- Calculate a Serial Number for each Sample Collection Report. Place a reference to this number on each Sample Collection Report listed on a given Sample Transfer of Custody Report.
- Put barcodes in two columns with printed barcode and Storage Requirements visible.
- If Destination is SMF, auto enter Ship To : Area 25
  Sample Management Facility
  If Destination is PI, auto enter Ship To : PI Name, address, etc.
- "Released by" is currently logged on user and current date, w/auto filled org, address, and phone.
- "Accepted by":
  If Destination is PI, PI name, org, address, phone, and current date.
  If Destination is SMF, SMF address, and current date. Leave name and signature blank.

Sample Collection Report
- Remove Sample Transfer block from bottom.
- Re-position and re-size other components.

Add PI as Search Criterial Parameter and Button to force new report despite no found matches.

Blank SCR, Screen 1 - data entry by user including lookups; Screen 2 - skip; Screen 3 - Data Entry including lookups.

Replace "Transferred To" with "Destination" on screens and reports.

Change "Destination" menu to include PI, SMF, and Other... only.

Remove Sample Transfer Information section on Sample Collection Report and remove that screen.

Add "Destination" field to Sample Information screen.

Eliminate "Export" from all batch processing facilities. Reserve Export for Main Menu Export facility only.

Add Main Menu Import Facility.

Time Range :
- default values of from login time to current time
- add 10th of seconds to default range
- disallow incomplete entries (remove blank values from menus)

Date Range:
- default values of from today to today
- disallow incomplete entries (remove blank values from menus)

Serialize collection reports as they are created.

Use Collection Report Serial number to determine last export and next export range (next range = last range end serial number + 1 to MAX of all serial numbers).

Found barcodes:

- copy summary field (total found) to a reg field and force dialogue to be fixed (non-scrolling)

Finish implementing tracking system for how many samples have been collected for a particular sample criteria. Would we ever want to view these barcodes upon query?

User and administrator documentation of Mapper Module system.

Add Notification Protocol field to Sample Information Screen.

Add Special Features field to TCO Module.

Computer Applications Group, Inc.

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

Sunday, July 3, 1994

Keith:

Here is the current version of the application. As I told you earlier, it took longer to complete than I expected, and I have not yet produced end-user documentation.

Please exercise the application as much as you have time for, and let me know about problems as soon as possible. That way I will be able to send you an update via modem Tuesday morning if needed.

A couple of limitations exist in the "search by date and time range" facilities. These will be repaired in the final version, but you should be aware of them now.

When entering a date in the date or time range screens, the date must be formated as in the following examples: 01 01 94, 01/01/94, 01.01.94, or 01-01-94. Leading zeros in one digit month or day designations are not needed. For example 01/01/94 is handled the same as 1/1/94. Also, the year may include 4 digits. For example 1/1/94 is handled the same as 1/1/1994.

If you enter a date which has 3 or more digits for the month or day, or 5 or more digits for the year, the application MAY CRASH. If you enter a date with alpha characters, the application WILL CRASH. So far, I am unable to detect and warn the user about such date entry errors before FileMake kicks in and complains bitterly about it, stopping the application in its tracks.

When entering times in the time range screens, the same sorts of limitations apply. The time is set up on a 24 hour clock, so you can enter 1 or 01:00 or 1:00 to indicate 1:00 am. You can enter 18 or 18:00 to indicate 6:00 pm, etc. If you enter alpha characters in time fields or enter a bunch of extra characters (like an 8-digit number), the application WILL CRASH. Same problem as with dates.

Again, I can resolve these limitations, but it's going to take more time.

Finally, the printing functions need to be set up for each printer to which the application will send print jobs. So if you give a copy to Steve Beason, I cannot guarantee the printing will behave properly on any printer he uses. Make sure he understands this. It's easy to set up printing defaults for any printer, it's just that printers vary and we cannot do that in advance. We must know what printer is being used before the setup can be done.

I've enclosed a few Sample Collection Reports produced from the batch processing button and some labels printed on paper.

Good luck and let me know how it goes.

Gillian
602-839-3557
602-839-3668 FAX

Computer Applications Group, Inc. **FAX**

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall

FAX: 602-839-3668
Voice: 602-839-3557

To: Keith Degner
Re: **Your Fax on Friday.**
Date: 6-13-94
Pages: 2

Call me when you get in this morning. I do need some clarification of the flow charts you sent Friday. The changes in process flow worry me. Do the mappers already have laptops? Why are laptops useful in this application — if the mapping gantry moves slowly and is easy walking distance from one end to the other, why not simplify things and just use one desktop PC?

A specific problem introduced by the process change is the data transfer process from laptop to PC. This may be accomplished in a number of ways (all of which make the system considerably more complex than the original plan). The following are a few options:

1) Radio modem communication may be used between laptops and the central mapping gantry PC. This solution allows laptop users to update the central PC and print reports and labels throughout the shift, thereby eliminating processing at the end of each shift. This solution has drawbacks, though. First, I don't know how well radio modems operate in the TBM environment. Second, this solution is not trivial to implement. Each laptop will have to be equipped with compatible modem hardware and software. If there is to be much modem traffic, a relatively fast PC will have to be installed as the "server". Otherwise, lots of waiting (slow response times) may cost us buy-in from users.

2) A data transfer application like LapLink could be used for end-of-shift batch processing. This would require the laptop user to connect to the PC via a serial cable. FileMaker scripting could then take over (This is non-trivial scipting and could delay delivery for a couple weeks). For this to work smoothly, all laptop users will have to conform strictly to directory naming and application path requirements (so that FileMaker will be able to reliably locate and transfer necessary files to the central PC and to laptops from the PC).

3) The simplest data transfer solution would be by floppy disk. This is also the most unreliable for two reasons. First, floppies are fragile and may have a high failure rate in a severly dusty or otherwise hostile environment. Second, floppy transfers require the greatest amount of user interaction and therefore, invite the greatest likelihood of serious errors or even system failure.

Another problem with changes presented in the flow charts is that they significantly complicates the application development process. It is important to remember that the simpler our design, the more likely we are to please our users early on. More complex systems have more potential failure points and will require longer training, refining, and debugging periods. If the mappers are after a "plug-and-play" system, distributing it accross laptops, requiring multiple daily downloads to a central PC, and batch report processing is not the way to go about it.

Finally, batch reporting (generating Sample Collection Reports and associated labels in one lump at the end of each shift for each mapper) seems in direct conflict with our original goal for this system. We wanted to put labels and reports in the hands of mappers (or PIs collecting their own samples) *when the sample was collected and packaged.* Waiting until the end of a shift to produce these products implies the mapper responsible will be going off-shift and someone else may be responsible for handling any confusion regarding samples collected during the previous shift. Waiting until the end of the shift also means reprinting a label or a report on the fly will not be possible (until the end of the shift). It implies the mappers will be writing on labels in long-hand, and then copying that information into the database — this is not in line with the process streamlining we've been working toward. Finally, batch processing means the likelihood of mixups and errors is put right back into the system.

I am looking forward to discussing the reasons behind the process design change. Without knowing the reasons for the change, however, I recommend we return to the original plan. If the process changes stand, I will have to present a beta version Wednesday which is complete EXCEPT for the upload/download and batch reporting facilities required by the new process flow.

The following is a fax I sent Deirdre this morning regarding the demonstration on Wednesday. Let me know if there is a problem with the scheduled time:

The first beta version of software under development for supporting ESF sample criteria and collection tracking will be available for review on Wednesday, 6-15-94.

The module currently in the beta testing phase is designed for use on the mapping gantry behind the TBM. It is intended to support mappers in their task of collecting samples for PIs. This module is designed to increase the effectiveness and efficiency of sampling activities on the mapping gantry. The system specifically addresses potential problems related to conformance with PI sample collection criteria, special instructions, packaging and storage requirements, etc. and ensuring collected samples are properly transferred. This module is designed to interface with forthcoming TCO and SMF modules facilitating a comprehensive sample criteria and collection tracking and reporting system.

A demonstration of this module, the YMP "Sample Collection Information System" or "SCIS" is scheduled for 11:00 AM Wednesday.

For further information, contact Gillian Hall at 602-839-3557.

Computer Applications Group, Inc. **FAX**

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall FAX: 602-839-3668
Voice: 602-839-3557

To: Deirdre Boak

Re: **Sample Criteria and Collection Tracking System Development Progress**
Demonstration of Mapper Module: "YMP Sample Collection Information System (SCIS)"

Date: 6-13-94

Pages: 1

The first beta version of software under development for supporting ESF sample criteria and collection tracking will be available for review on Wednesday, 6-15-94.

The module currently in the beta testing phase is designed for use on the mapping gantry behind the TBM. It is intended to support mappers in their task of collecting samples for PIs. This module is designed to increase the effectiveness and efficiency of sampling activities on the mapping gantry. The system specifically addresses potential problems related to conformance with PI sample collection criteria, special instructions, packaging and storage requirements, etc. and ensuring collected samples are properly transferred. This module is designed to interface with forthcoming TCO and SMF modules facilitating a comprehensive sample criteria and collection tracking and reporting system.

A demonstration of this module, the YMP "Sample Collection Information System" or "SCIS" is scheduled for 11:00 AM Wednesday.

For further information, contact Gillian Hall at 602-839-3557.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

Memorandum

Date: Tue, May 24, 1994 - Revised Thu, Jun 30, 1994
To: Fred Homuth, LANL TCO
From: Jim Hall

CAG 919414401

Subject: Comments on the M&O Draft Document, *IDCS Network and Storage Data Rate Analysis*, dated 05/13/94

Summary
The M&O has developed a draft analysis of projected IDCS data rates and data storage requirements to be used as the basis for design and procurements. Our review of this preliminary analysis and our own estimates developed in this document (shown in Attachment 1) leads us to the following conclusions:

1. Average network data rates are very low, allowing the use of economical, established technologies. The basic network should need changes or upgrades for the life of the project

2. M&O liberal use of contingencies in their analysis has inflated their determination for data storage requirements over the lifetime of the IDCS to 5X - 100X higher than our estimates. These contingencies are not needed with the proposed IDCS modular design. This modularity implies meeting increasing data rate requirements with modular expansion *when required*. Data storage requirements will change with variations in excavation strategies and refinement of the testing program. These changes may increase or decrease storage requirements. Contingencies only increase system capacity leading to probable over-estimates. IDCS performance requirements will be known far enough in advance (based on construction and testing schedules) to procure and install more modular expansion capacity as requirements are identified.

3. Massive amounts of Facility Monitoring and Control System (FM&CS) data are identified for collection. Our estimates have resulted in the following observations:
   - FM&CS data exceeds the quantity of testing data by 5X - 100X
   - Average network data rates are so low that even this massive increase in data transferred, compared to smaller amounts of test data, should not impact network performance.
   - Our estimates of long term data storage capacity for testing data of 5.4 MBytes/day imply a modest IDCS database computer system. The M&O determined rate of 510 MBytes/day implies a substantially more complex system. If FM&CS data rates were similar to SNL Construction Monitoring Test data rates (≈2,000 data measurements/day average over 3 years), they would have little impact on an IDCS designed to transfer and store test data only.

4. The M&O analysis indicates that IDCS performance will be dominated by FM&CS data collection activities. It is unclear how this will impact PI's utilization of IDCS; however, we have several concerns as follows:
   - Increased IDCS complexity may impact utilization of the system by PIs.
   - If increased IDCS complexity leads to increased costs, these higher costs may impact DOE's readiness to fund the system, making it unavailable for testing in a timely manner.
   - Since detailed design and integration of IDCS will be subcontracted to an off-project vendor by the M&O, increased complexity may result in a higher level of vendor performance problems impacting timely availability.

Comments

General: A tentative estimate of test data rates and data storage requirements through FY97 has been developed in this memo to verify the results presented in the M&O draft analysis. M&O calculations have been verified; however, we do not agree with certain of their preliminary assumptions. The Facility Monitoring and Control System (FM&CS) data rates are ≈5X to X100 larger than test rates, and thus dominate network and system related requirements. These high rates swamp the effects of test data on IDCS performance. Observations resulting from the M&O analysis and our estimates are as follows:

- Assuming test data rates 10X larger than the testing rates shown still results in modest network rates and storage requirements for test data (excluding FM&CS data).
- Contingency multiplying factors used in M&O data rate calculations tend to obscure the basic rates and inflate data storage needs, complicating estimates of reasonable contingent capacity.
- The M&O analysis does not recognize that much of the FM&CS data and a portion of test data will stop being accumulated at the end of excavation activities. Extrapolating the M&O data beyond end of excavation activities results in unrealistic and bloated accumulated data figures.
- Network data rates are very low and almost any current network protocol would be satisfactory in terms of speed. Network extent and noise immunity considerations will limit choices.

FM&CS Data Rate Concerns: The high FM&CS data rate leads to the concern that the more complex system required to support these data rates may impact testing schedules, reliability, and the system may lose flexibility to accommodate changing test requirements. The FM&CS data rates would be expected to drive the cost of the IDCS higher in the near term than a system based on a testing level of data acquisition. FM&CS data rates are expected to be high from the very start of IDCS operation and increase linearly with time. Testing requirements are small in the first two years and increase later. A higher than expected initial cost could delay funding and IDCS field implementation. Interesting issues related to FM&CS data are as follows:

- Does the sheer volume of FM&CS data indicates that it is very important information?
- What impact will the loss of FM&CS data be for users? FM&CS data will be lost from the time the TBM starts (≈Aug 94) to the time the IDCS starts to acquire data (≈Feb 95).
- Is a temporary data acquisition patch system needed to capture this early data and make the it available to users in a timely manner prior to IDCS coming on-line?
- Who are the users of the FM&CS data?
- What are the deliverables based on analysis of FM&CS data and who is the responsible PI?

M&O Analysis Questions: Several details of the basic M&O assumptions need clarification to understand the development of their analysis as follows:

1. What is the basis for 128-byte packets in 7.2.1 as inclusive of expected data?
2. What is the basis for the normal/abnormal data rate estimates and assumptions in 7.2.1?
3. What are the definition of peak data rates?
4. What conditions cause peak rate events and what is their periodicity?
5. What is the rationale for FM&CS data rates?
6. What is the lifetime of the system and what is the relationship of data rates to age?
7. What is the rationale for the proposed enormous quantity of FM&CS data generated from construction activities not directly related to the current DOE test program, site analysis, and licensing issues.

Calculating Data Rates

Calculations for final test operation are included here. Startup activities that might generate higher or lower avaerage rates have not been considered. This estimate is too general to attempt to develop peak data rates based on scheduled test installation, startup, and shutdown.

M&O FM&CS Data: Only changes to the monitored FM&CS data will be transmitted to the surface computer. Normal operations will occupy an estimated to be 98% of the time and will result in few changes in the monitored data. During the remaining 2% of abnormal operation, data rates are expected to be substantially higher. Data monitoring assumptions for normal/abnormal operating conditions are summarized below:

- Normal One 128-byte data packet/channel/8 hour shift
- Abnormal One 128-byte data packet/channel/10 sec

For each FM&CS point:

Bytes/day = (128-bytes/shift/point)*(3 shifts/day)*(0.98 fraction of the day for abnormal operation)+(86400 sec/day)/10-sec periods/day)*(128 bytes/point/10-sec period)*(0.02 fraction of the day for abnormal operation)
= 22,495 bytes/day/point

USGS: Radial Borehole Test (RBT) primary data will be will be generated during water potential calculations from thermocouple psychrometer (TP) measurements. USGS data acquisition equipment will make the TP measurements and perform calculations generating data to be transferred to the IDCS. Data monitoring assumptions for water potential measurements are summarized below:

- One water potential measurement/day at each TP sensor
- Four TP sensors/borehole and three boreholes/test location
- Each TP measurement generates 40-80 calculated data values
- A nominal 60 data values/measurement will be used in the calculation of data rates
- USGS data is transferred as a file with embedded formatting, 16-bytes/value
- Five RBTs will be developed

For each RBT:

Bytes/day = (1 measurement/day)*(4 TPs/borehole*3 boreholes/measurement)*(60 values*16 bytes/value)*(2 packet bytes/data byte)
= 23,040 bytes/day

SNL: Construction Monitoring Test (CM) monitoring instrument stations are planned to be located serially along the North and South Ramps, Main Ramp, and North Ramp Extension at approximately 450 ft intervals. Instruments will be distributed over the area serviced by each instrument station station. Several instrument stations will be wired to a common Data Acquisition Station (DAS). Data monitoring assumptions for these measurements are summarized below:

- 11 CM data acquisition stations will be developed to service the ESF
- 200 data channels (points)/DAS
- Normal monitoring rate will be 1-measurement/day for 90% of the time
- Abnormal monitoring rate will be 1-measurement/hour for 10% of the time

For each CM DAS:
Bytes/day = ((1 measurement/day*0.9 fraction of the day for normal operation)+
(3 measurements/day *0.1 fraction of the day for abnormal operation))*
(200 points/DAS)*(32 bytes/point)*(2 packet bytes/data byte)
= 15,360 bytes/DAS/day

Thermal Tests: Evaluating the impact of the major heated tests will representative of large test data rates. Other testing activities not identified will be smaller than the uncertainty of the projection. Data monitoring assumptions for Heated Test measurements are summarized below:

- 2 thermo-mechanical tests
- Combined tests use 10,000 data channels (points)
- Normal monitoring rate will be 1-measurement/day for 90% of the time
- Abnormal monitoring rate will be 1-measurement/hour for 10% of the time
- Test installation starts during FY96Q4 and takes 1 year to install

For the combined tests in full operation operation at the end of the 1-year installation period:
Bytes/day = ((1 measurement/day*0.9 fraction of the day for normal operation)+
(3 measurements/day *0.1 fraction of the day for abnormal operation))*
(10,000 points)*(32 bytes/point)*(2 packet bytes/data byte)
= 768,000 bytes/day (max rate at the end of installation)

Projecting IDCS Data Rates: The above rates have been used to estimate data rates through Oct 1997 for USGS RBTs, SNL CM, and combined Heated Tests shown in the following charts. M&O information from their analysis has not been duplicated here. Preliminary IDCS schedules indicate that the system will be ready for data acquisition in ≈Feb 95. This schedule causes rates for FY94Q4 and FY95Q1 to be zero.

Projecting data rates for other tests using IDCS is beyond the scope of this comment. Due to the tentative nature of the data acquisition estimates included here, no contingencies or peak data rates are included. The M&O projection of 80% of their identified 18,000 channels being on-line concurrently was used to estimate long term data storage needs. This number is probably unrealistic as even a "worst case" scenario. Tests do not run indefinitely and all tests have a projected lifetime. The number

of concurrent channels being monitored will depend on the testing strategies in place at the time. It is expected that as many as 10,000-12,000 channels could be on-line concurrently, however this assumes that several major tests currently identified as deferred will be implemented early in the testing cycle. A basic functional requirement for IDCS is a modular design capable of being expanded as needed. It would be inappropriate for testing purposes to design a system targetted at monitoring 18,000 concurrent channels early in IDCS procurement planning (i.e., FY95-96) when this is not currently a part of test planning. If this capability was needed later in the program, the requirement would be anticipated by a year or more giving IDCS adequate time to procure and implement the needed modular pieces to support such a requirement.

The attached charts summarize the estimates developed above as follows:

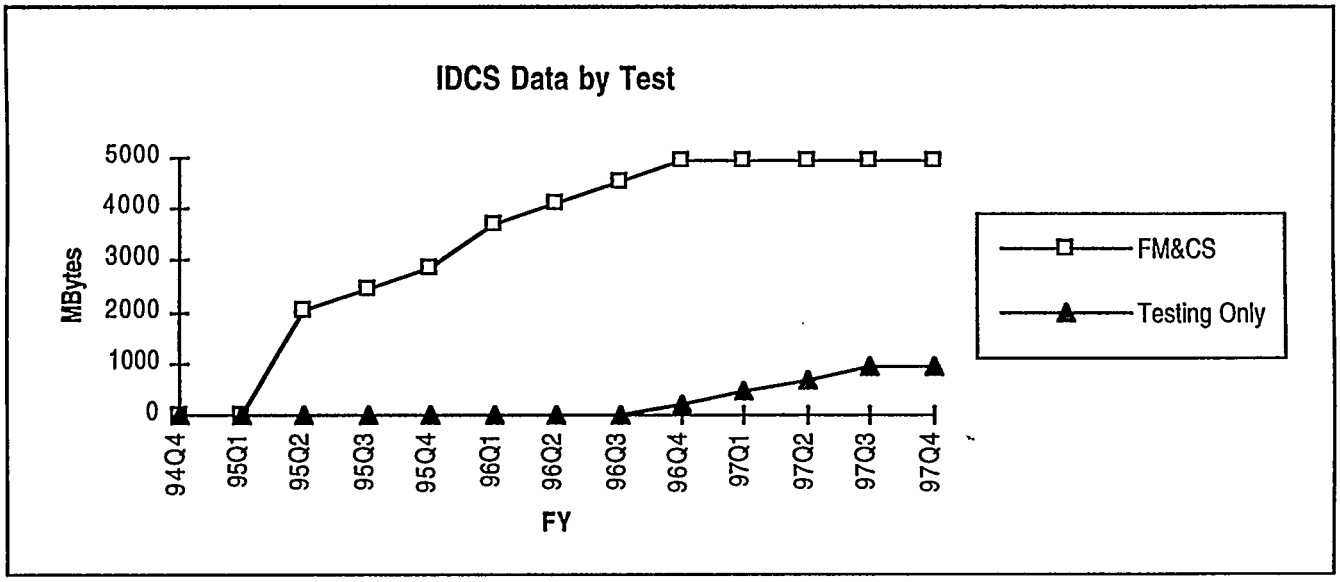
IDCS Data by Test: A number of new data acquisition sources are brought on-line during each fiscal year. The relative activity of three tests and FM&CS cumulative data acquisition during each quarter for fiscal years FY94-FY97 is shown. For example, during FY94Q4 and FY95Q1 no data is acquired by IDCS. During FY95Q2 testing produces 5 MBytes and FM&CS produces 2048 MBytes and during FY95Q3 testing produces 7 MBytes and FM&CS produces 2457 MBytes.

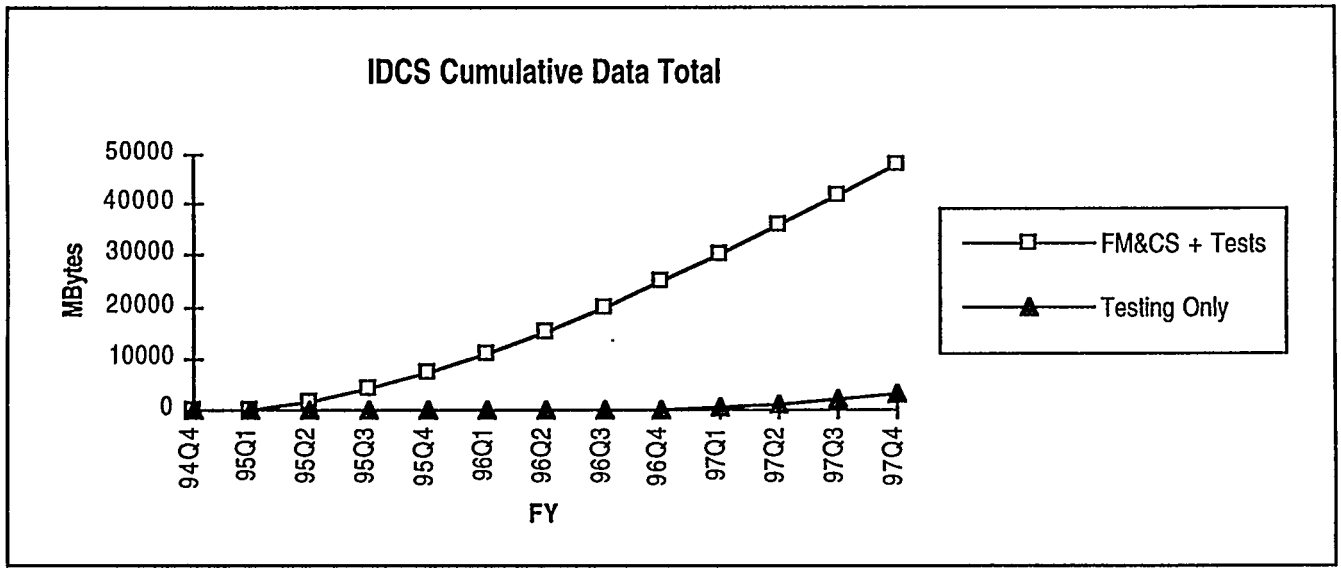
IDCS Cumulative Data Total: This figure shows the result of adding each successive quarters data shown above to the preceding months total. For example, during FY94Q4 and FY95Q1 no data is acquired by IDCS and the cumulative total through FY95Q1 is 0 MBytes. During FY95Q2 testing and FM&CS together produce 2052 MBytes of data,and the cumulative total increases to 2052 MBytes. During FY95Q3 testing and FM&CS produce an additional 2464 MBytes of data which, when added to the previous periods total, results in 4516 MBytes total accumulation through FY95Q3.

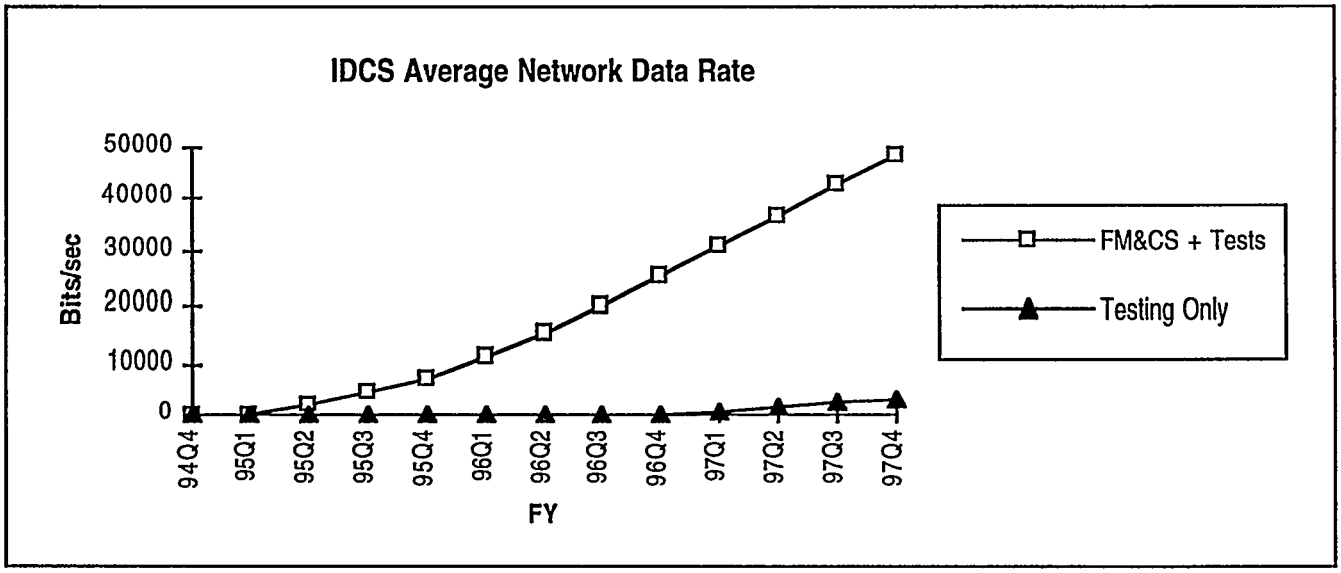
IDCS Average Network Data Rate: The average data rate is arrived at by dividing the *IDCS Data by Test* quarterly figure (converted to bits) by the number of seconds per quarter.

Distribution:
N Elkins, LANL, EES-13/LV, MS 527
R Oliver, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

Attachment 1 - Estimate Results







Attachment 2 Estimate Calculations
Excel Spreadsheet - Data Only

IDCS Data Rate Summary

Test Details

	94Q4	95Q1	95Q2	95Q3	95Q4	96Q1	96Q2	96Q3	96Q4	97Q1	97Q2	97Q3	97Q4
FM&CS Detail													
FM&CS on-line	0	0	1	1	1	1	1	1	1	1	1	1	1
New pts on-line	400	400	200	200	200	400	200	200	200	0	0	0	0
Total pts on-line	400	800	1000	1200	1400	1800	2000	2200	2400	2400	2400	2400	2400
MBytes/day/pt	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
RBT Detail													
RBT DASs on-line	0	0	1	2	3	3	3	3	3	3	3	3	3
MBytes/RBT/day	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
CM Detail													
CM DASs on-line	0	0	2	2	3	5	7	7	8	10	11	11	11
MBytes/DAS/day	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Heated Test Detail													
On-line this quarter	0	0	0	0	0	0	0	0	1	2	3	4	4
MBytes/DAS/day									2.56	2.56	2.56	2.56	2.56

Cumulative per Quarter FY94Q4 - FY97Q4 (91 days/quarter)

Data per Test - MBytes

	94Q4	95Q1	95Q2	95Q3	95Q4	96Q1	96Q2	96Q3	96Q4	97Q1	97Q2	97Q3	97Q4
FM&CS	0	0	2048	2457	2867	3686	4095	4505	4914	4914	4914	4914	4914
Testing Only	0	0	5	7	10	13	16	16	250	486	721	954	954
RBT	0	0	2	4	6	6	6	6	6	6	6	6	6
CM	0	0	3	3	4	7	10	10	11	14	15	15	15
Heated Tests	0	0	0	0	0	0	0	0	233	466	699	932	932

Cummulative Totals - MBytes

	94Q4	95Q1	95Q2	95Q3	95Q4	96Q1	96Q2	96Q3	96Q4	97Q1	97Q2	97Q3	97Q4
FM&CS + Tests	0	0	2052	4516	7393	11092	15203	19724	24888	30288	35923	41790	47658
Testing Only	0	0	5	12	22	36	52	68	318	804	1525	2478	3432

Network Data Rates - Bits/sec

	94Q4	95Q1	95Q2	95Q3	95Q4	96Q1	96Q2	96Q3	96Q4	97Q1	97Q2	97Q3	97Q4
FM&CS + Tests	0	0	2088	4595	7523	11286	15469	20069	25324	30818	36552	42522	48492
Testing Only	0	0	5	12	23	36	53	69	324	818	1552	2522	3492

Linear Model Storage/day - MBytes

	Total	Tests Only
2yr (FY95-FY96)	34.1	0.4
3yr (FY95-FY97)	43.5	3.1

Computer Applications Group, Inc. FAX

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

From: Gillian Hall

FAX: 602-839-3668
Voice: 602-839-3557

To: Deirdre Boak

Re: Test Planning Database Project

Date: 5-22-94

Pages: 5 (with 4-pgs of attachments)

I appologize for failing to get you disks by last Friday as promised. The tasks involved became more time consuming than I had hoped.

I sent disks, the original of the attached memo (which makes reference to files on those disks), and a hard copy of the new Sample Collection Report via Fed. Exp. on Saturday. You will have that delivery by 10:30am Tues.

In the mean time, I can send the files to you via modem if you need them today (I'm not sure when you said you were meeting with the mapping platform folks?) I will be available most of the day at my voice line (above). Please leave a message if I am out. I will return your call promptly.

I am coming up with questions regarding the data, reports, etc. I've addressed a few in the attached memo, but there are other more "foundational" concerns arising for me. Nothing to worry about. I am just finding I need a better understanding of the processes, products, and information involved.

I got some good information on bar code hardware and software "plug-ins" for FileMaker. I'll share it with you when I'm down this week.

Computer Applications Group, Inc. MEMO

3501 South McClintock Drive, Suite 2038 • Tempe, Arizona 85282 (602) 839-3557 • (602) 839-3668 FAX

CAG: 919411201
LANL Subcontract: 9–X52-Z9658–1
Fri, May 20, 1994
Page 1 of 3

To: Deirdre Boak
From: Gillian Hall
Subject: Sample Planning and Tracking Database Progress

Enclosed are disks with the new FileMaker database files. I have adopted a convention in the design of data entry forms:

- Yellow fields are for user input (manual data entry)
- Green fields are lookup fields (values are automatically entered based on entries in Yellow fields).

All files with lookup fields now automatically perform an update of looked-up values when the file is openned. There is also a menu option for these files under Scripts called Update Lookup Values. This script can be used to perform an update of lookup values at any time.

I am having some difficulty with the data. Please think about the following data issues. We need to discuss them next time I am there in the office.

- **Calculated Study Plan Number**
  I have encountered several instances where the Study Plan number is NOT a truncation of the SCP Activity number. This means we can not reliably calculate the Study Plan number and that the Study Plan number must be looked up instead of calculated.

  I have implemented this using the ACTIVITY.FM file. This file is the repository for everything which is UNIQUE to a particular SCP Activity and which cannot be calculated or looked up based upon other unique attributes of SCP Activity.

- **Unique SCP Activity Attributes**
  The current implementation of ACTIVITY.FM shows that an SCP Activity has a one and only one: Number, Name, Study Plan, TPP, & JP.

  Other possibly unique attributes I've identified (which cannot be calculated or looked up based upon values of other unique attributes) are: Summary Acct., P&S Acct., PI.

  We need to determine corrections for errors and omissions. Think about questions like, "Is the PI for an SCP Activity the same for each ESF Test Phase?".

- **WBS Elements**
  We need to determine (or dictate) the relationship between WBS Elements and Study Plans /SCP Activities. I have been assuming that there is one and only one WBS Element associated with a Study Plan and that there is one and only one Study Plan associated with an SCP Activity. I need to be sure that the ESF Element is truly a child of the the

Study Plan, and not the SCP Activity. I have found evidence to support that WBS is the child of Study Plan. I have also found evidence WBS is the child of SCP Activity. We need to determine definitively which is the true relationship.

- **TCO Test Event Names**
  As we have already discussed, there appears to be a pattern in the assignment of TCO Test Event Names (i.e. the first part comes from the TPP and the second part comes from the JP). I have implemented a lookup/calculation of TCO Test Event Names in the TESTEVNT.FM file enclosed. This method works very well but the data regarding TCO Test Event Names contains inconsistencies which may prevent us from calculating TCO Test Event Names in the final implementation of the database system.

  The main problem (or inconsistency) is that the JP portion of TCO Test Event Names varies with the ESF Test Phase. For example JP 92-20C maps to "Starter Tunnel" in Phase 2. The same JP maps to "ESF" in Phase 3.

  In order to reliably calculate TCO Test Event Names, we must either...
  1) assign ONE "TCO Test Event Key" to a JP regardless of ESF Test Phase, OR
  2) create a JP number extension which identifies the ESF Test Phase (e.g. "JP 92-20C.P1" for Phase 1). Unfortunately, FileMaker will not let us perform a lookup of TCO Test Event Key when JP Number and Phase are matched in the current and lookup files. In a relational database this is called querying using multiple keys. FileMaker is a "single key kind of database". Sigh.

- **TESTEVNT.FM vs. ACTIVITY.FM**
  Since an SCP Activity can exist under many ESF Test Phases, the TESTEVNT.FM file is necessary to identify the SCP Activities occurring within each phase. So where the ACTIVITY.FM contains only UNIQUE SCP Activities, TSTEVENT.FM may contain the same SCP Activity multiple times, but under different ESF Test Phases.

  The TESTEVNT.FM file is used to produce the ESF / TCO Test Plan Sequence - Planning Table report (called Legal Report in the file) which is organized by ESF Test Phase, then by TCO Test Event, and finally by SCP Activity.

- **Relationship Between TPPs, JPs, WPs, and SPs**
  I have found that a JP can be under several TPPs and that a single TPP can be over several JPs. This makes the relationship quite complex to represent in FileMaker. For now I've settled on only relating JPs and TPPs through SCP Activities (see ACTIVITY.FM). This means, though, that I'm assuming an SCP Activity is related to one and only on JP and to one and only on TPP. Is this universally true?

  Based on a discussion of your original design diagram, I assumed that there is one and only one Work Plan for a specific JP and that there is one and only one Sample Plan for a JP. I need to be sure my heirarchical understanding of these elements is correct. Is the relationship really between JP and WP, and between JP and SP? My original understanding was that each SP was under a WP which was under a JP. This conflicts with my current understanding that both SP and WP are directly under (or related to) JP.

  I need to get this cleared up. The current implementation (see JPS.FM) supports a one to one direct relationship between JP and SP, and between JP and WP.

As far as the two FileMaker files you gave me to integrate into the existing system, I have a number of questions:

1) What is the difference between the set of records in the "ESF Test Planning & Field Implementation Tracking" database file and the "ESF Test Planning: Consolidated Sampling in the ESF North Ramp" database file. The former is a subset of the later from the perspective of data elements, therefore they could be integrated into one file. I need to define a field on which you can perform finds, though, to enable you to separate out the records you currently have stored in "ESF Test Planning & Field Implementation Tracking". We'll need to discuss this.

2) I have integrated the two files into one and called it SMPLPLN.FM. This file is linked to the TESTEVNT.FM, SDYPLAN.FM, ACTIVITY.FM, TPP.FM, and JP.FM files via lookup fields. You have defined a number of SCP Activities and Study Plans not defined in Ron's ESF/TCO Test Plan Sequence Planning Table. I have integrated some of these into the system but not all. They must be entered in the ATIVITY.FM and STDYPLAN.FM files respectively.

3) For now, all your reports are produced from the single file SMPLPLN.FM. As noted earlier, these reports will likely not be generated as you would expect since...
a) no sorting criteria has been developed to create subsets equivalent to the two separate files you originally developed, and
b) the problems related to calculating TCO Test Event Names discussed earlier are demonstrated in this file.

4) Finally,the mock-up the YMP Sample Collection Report is in the SMPLCOLL.FM file. A hard copy of an example record is enclosed with this memo.

I will be down Thursday (mid-morning) through Friday. I'm still counting on a 9am meeting on Friday with you. I'll see you then.

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

COST ESTIMATE

CAG: 919411102

Thu, Apr 21, 1994

To: Elaine Ezra
From: Jim Hall
Subject: Proposal for FY94 Work to Support EGG Database Related Tasks

Summary

As a follow up to discussions at the meeting between CAG and EGG of Thu, Apr 7, 1994, we have prepared an estimate of cost and effort to accomplish three targeted tasks. In spite of uncertainties in possible effort (e.g., maintenance changes and bug fixes) we believe these estimates represent a realistic identification of scope and cost.

The three tasks identified for costing are as follows:

1. Continued support for the TFMDB after the February, 1994 transition to EGG.

2. Development of a new TFMDB PC front end to eliminate support for a stand alone TFM database at the FOC (and the M&O).

3. Support for on going EGG database development activities.

The effort and costs are summarized in Table 1 below:

FY1994 CAG Support for EGG Database Development

	Hours[1]	Trips[2]	Cost
1. Post-Transition TFMDB Support Feb–Apr 94 On Going TFMDB Support	130 160	3 4	$10,124 $12,548
2. New TFMDB Front End	210	5	$16,398
3. EGG Database Development	?	?	?
TOTALS	500+	12+	$39,070+

1. Hours for Gillian Hall, CAG CIS Specialist
2. Trips for Gillian Hall

Details

Task 1: *Continued post-transition support for the TFMDB*
Continued TFMDB support after the formal Feb 18, 1994 transition date includes on going changes, testing, and maintenance to the TCO stand alone TFMDB PC application to conform to EGG TDB TFM database requirements. Activities to support this task are as follows:

- Continuing changes, training, and maintenance for the FOC TFMDB
  Deliverables: Final FOC TFMDB – Wed, Jun 1, 1994
  Final FOC TFMDB User's Manual – Wed, Jun 1, 1994
  Runtime Version of FOC TFMDB – Fri, Jul 1, 1994

- Upload/download data transfer for the FOC, EGG, and any future users
  Deliverable: Installation of updated TFMDB application – Wed, Jun 1, 1994
  Completion report – Wed, Jun 1, 1994

- Modify the TFMDB for the M&O and provide training and maintenance.
  Deliverable: M&O TFMDB – Wed, Jun 1, 1994
  Final M&O TFMDB User's Manual – Wed, Jun 15, 1994
  Runtime Version of M&O TFMDB – Fri, Jul 15, 1994

The costs for all activities in Task 1 are as follows:

TASK 1: Continued Post-Transition Support for the TFMDB

	Hours [1]	Trips [2]	Cost
Post-transition TFMDB effort through mid-April	130	3	$10,124
Support for EGG TFMDB on going activities including planned FOC TFMDB modifications, the additional M&O TFMDB, training, and maintenance for both	160	4	$12,548
TOTALS	290	7	$22,672

Task 2: *Development of a new TFMDB PC based front end*
Includes the development of a new front end for for the TFMDB to allow remote users using an IBM compatible PC direct access to GENESIS via dedicated phone line, modem, or LAN. The application will be developed in Paradox-for-Windows as a run-time module. This front end will eliminate the need for uploads/downloads and problems inherent to synchronization of local database information that is inherent in the use of the present TFMDB application.

Deliverables: FOC TFMDB Front End Application – Fri, Sep 16, 1994
FOC TFMDB User's Manual – Fri, Sep 16, 1994

The costs for all activities in Task 2 are as follows:

TASK 2: Development of a new TFMDB PC based front end

	Hours [1]	Trips [2]	Cost
Design and coding	140	1	$10,262
Documentation, installation, training, and maintenance	70	4	$6,136
TOTALS	210	5	$16,398

Task 3: *Support for on going EGG database development activities*
Includes data base design and support activities. An example of this activity activity is the input supplied on CMS database design. Possible future activities may include support for UNIX based TFMDB front end development. There are no targeted tasks or scope for this task identified at this time and consequently no costs or deliverables are identified and costs are unknown. This activity may best be handled by identifying a ceiling cost cap for Task 3. The scope for each assigned sub-task activity will be cooperatively developed prior to work assignments. The cost cap and frequent CAG progress reporting during sub-task activity, including costs to-date, would provide a reasonable degree of cost control.

Detailed Cost Breakdown
Direct labor costs and trip costs are based on current LANL contracted rates as follows:

1. Fully burdened rate for Gillian Hall is $71.25/hour.
2. Each trip is costed as 1 round trip airfare, 1 nights lodging, 1 day per diem, and 1 day car rental, for a total of $287/trip.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

MEMO

CAG: 919409401
LANL Subcontract: 9–X52-Z9658–1

Mon, Apr 04, 1994

To: Fred Homuth
From: Jim Hall
Subject: Recommendations for Developing IDS for FY 94-96

Summary
Recent re-evaluations of IDS usefulness to the project by DOE has led to a series of developments that still leave the fate of IDS undecided. Over the past 2-years IDS has suffered a series of setbacks that may finally kill the project. Although there are many issues that have led to this state of affairs, the three following items are key issues contributing to a faltering IDS:

- The TCO provided inadequate leadership in educating DOE to the advantages and importance of IDS. This task has defaulted to the M&O who have done a poor job.
- The M&O put the wrong team on the IDS task. The Fluor-Daniel team has failed to produce even the most primary documents to support the design and their implementation strategies are flawed. TRW chose Fluor-Daniel over their own more qualified personnel.
- Current re-evaluations are not focusing on how to get an IDS. Discussion is dominated by M&O Fluor-Daniel attempts to justify their design and implementation strategies.

The driving rational behind IDS should be a data acquisition strategy that includes local data acquisition, local and central data storage appropriate for the task, consistent data formats, test monitoring from the surface, and an overall maintenance and operations program for IDS. Certain tests may not need IDS or they may provide their own specialized data acquisition equipment, however, these tests should have little impact on a correctly implemented system. IDS support for planned FY94-96 tests should be implemented using a complete commercial data acquisition system such as the one originated by USBM and supported and manufactured by Conspec. Minimal Project design engineering support would be required to implement this type of system since it does not require design engineering, integration, software selection, etc.Based on the current WIPP procurement of a similar Conspec system, it would be advantageous for DOE to allocate additional funding (≈$300K) to the existing USBM contract to provide backup engineering support for the Conspec system. During field experience with the Conspec system, its performance and usefulness would be evaluated by users and form the basis for IDS expansion in FY97 and beyond. After an initial procurement in FY 95, additional IDS equipment would be procured as needed. Immediate action is needed to resolve IDS status and future. The following steps should be taken to expedite IDS:

- DOE should identify the Conspec system as the equipment to be used for an interim IDS.
- DOE should identify the TCO as the IDS task lead. The TCO would continue in their role

as testing interface and assume a more active role acting for DOE to define M&O IDS design and procurement tasks and oversee Operations and Maintenance activities.

- DOE should identify EG&G as the IDS Operations and Maintenance (O&M) contractor and interim integrator, to replace the M&O proposed integrator subcontractor. EG&G responsibilities would include assisting the M&O preparing purchase requirements, acceptance tests, specifying wiring and installation details, and operation and maintenance of the system.

- M&O data acquisition responsibilities would be focused on their Integrated Control System (ICS), IDS procurements to support specific tests identified by the TCO, and supporting EG&G IDS activities as requested by EG&G or the TCO.

History

Recent re-evaluations of IDS by DOE usefulness has led to an upsurge of historical and selfish issues in the name of "evaluating" IDS. After the original DOE and LANL YMP managers formulating IDS left the project, succeeding managers increasingly lost touch with the task. This was due in large part in the inability of IDS to communicate their mission together with an implementation rationale that was consistent with DOE's budget needs and overall project goals. As DOE became increasingly estranged from IDS, an adversarial relationship developed to the extent that DOE limited or canceled IDS budgets and finally prevented any capital procurements that would have lead to deployment of IDS in FY94. Over the past 2-years IDS has suffered a series of setbacks that may finally kill the project. They can be summarized as follows:

1. The fourth complete change of IDS design responsibility when DOE assigned the task to the M&O. This was opposed by the TCO (letter from H Kalia (LANL) to L Little (DOE)).

2. The TCO's lack of initiative with DOE managers to develop an understanding of IDS and its usefulness to the project. This has lead to a diminished TCO role in defining IDS.

3. Confusion resulting from the lack of DOE leadership in identifying IDS as a vital test support activity with needed funding or by cancelling IDS activities altogether.

4. TRW's selection of Fluor-Daniel to do the design in preference to TRW's own internal personnel who were more qualified and better suited to the YMP environment.

5. The Fluor-Daniel team's change in IDS manager (K Gidwani to B Carlisle) after 12 months.

6. The Fluor-Daniel team's consistent presentation to DOE of IDS budgets, concepts, and plans that were obviously inappropriate to project needs and out of sync with DOE needs and funding targets. Because the TCO's role has been poorly defined, the M&O has ignored our attempts to limit their role to providing specific, test oriented IDS solutions.

7. The Fluor-Daniel team's inability to understand or accommodate the research oriented, limited budget, and grow-as-you-go strategies for developing the IDS.

8. The Fluor-Daniel team's relentless reliance on high-level project documentation as the only necessary defining rationale for their IDS design concepts, leading to inaction when requirement or testing details were unavailable, conflicting, or inappropriate. Most functional and specific requirements are out of date and design details for most tests are not available. The team has shown little initiative to solve the existing problems of implementing IDS.

Current State of Affairs

M&O IDS design strategy is based on the premise that after writing a complete enough bid specification, commercial companies will do a satisfactory detailed design in response to the request for bid. The M&O design team has had mixed experiences (successes and failures) with this approach in oil refinery and processing plant automation projects. In these industrial projects the target task was fixed for the identified process. Many vendors were available who had participated in these tasks before and were familiar with the current job. The entire automation system was bought, installed, and brought on-line under one procurement, usually from a single vendor. This vendor acted as hardware and software designer, integrator, installer, and often operator. These contacts were large ($5M-$50M) with fixed terms and conditions. The expertize needed to field IDS is significantly different from these industrial tasks. The job must start on a very small scale, expanding as new requirements firm up in out years.The final system design will evolve over this period. This evolving IDS results in the following problems for the M&O:

1. The design process has slowed to a stop while the M&O attempt to design the complete, final system before proceeding with the first steps of implementation for next year.

2. A comprehensive bid specification cannot be completed based on this final design concept since all of the test IDS requirements have not been developed. The TCO has repeatedly suggested engineering estimates be used to predict these requirements, however, the M&O does not find this approach acceptable.

3. Budgets are not available this year, next year, or the following year to attract a substantial integrator (i.e., a DEC or Hewlett Packard scope company). Smaller, less capable, companies would certainly be interested in the work and would be of questionable value.

4. Choosing a completely designed off-the-shelf system such as a Conspec system for use as an interim solution is unacceptable since it does not or may not meet all of the M&O anticipated specifications for the final system (and requires little engineering support).

The prime conceptual problem with the M&O's continuing with their present IDS design is their reliance on a yet to be identified IDS system integration subcontractor to the M&O. This integrator is the key to implementing a successful IDS. The integration function has been an intrinsic part of all preceding IDS designer capabilities who had hardware and software development engineers on their staffs. M&O IDS designers do not have this capability. They do not do any nuts and bolts design work. The M&O IDS are specification engineers and their task is limited to the identification of defining specifications, selection of potential bidders, development of bid specifications reflecting industry capabilities, proposal reviews, and recommendation of a vendor. They have no viable strategies for ensuring that the job gets done right and on-time in our environment. Their experience is that the vendor will meet the requirements or default. This is an inappropriate strategy for a scientific endeavor. We may only get one chance to get data from many of the tests. A defaulting vendor or court cases to resolve responsibilities is not consistent with Project needs.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

MEMO

CAG: 919409701
LANL Subcontract: 9-X52-Z9658-1

Thu, Apr 07, 1994

To: N Elkins
From: Jim Hall
Subject: Recommendation that the TCO to take the lead with IDS

Summary
DOE has accepted, in principal, the IDS VE Study conclusions that a central data acquisition system for ESF is economical and useful. They continue to try to understand how a reasonable IDS implementation can be achieved. As a basis for discussion of IDS issues I would observe to following:

1. IDS has reached a critical decision point. To successfully support tests in FY95 planning and preparation for procurements must be completed by September 1994 with procurements started in October. To accomplish this goal I recommend the following actions:

   a. The TCO needs to become proactive to push the M&O to get the IDS design and development done. This fits in with other test planning processes and allows TCO test planners and TCO field support staff to drive IDS availability.

   b. The TCO must ensure IDS availability in a similar to other test planning support activities. The TCO must clearly identify testing needs and formally request M&O support. In addition to defining requirements and schedules, the TCO must verify M&O budget projections and take part in DOE presentations to support and/or defend testing data acquisition needs.

2. It is necessary to focus the M&O scope of IDS design work to successfully field a system in FY95. This can best be accomplished by giving direction to the M&O as follows:

   a. Provide a specific set of near term IDS requirements to replace those contained in the current ESF DR, FRD, and other documents.

   b. List the tests to be supported in FY95-96 (tentative pending developments), measurements needed, and operational schedule.

   c. Identify and suggest the equipment that might be suitable for the job and request that they proceed with procurement. The short time available and limited man-power in the M&O

makes it necessary that we request prompt evaluation and response to our requirements and because of the limited time and resources to prepare for FY95 testing the M&O may want to consider using Conspec equipment as the initial stage of test data acquisition development.

3. To accomplish these goals I suggest we proceed as follows:

   a. N Elkins writes a memo to J Faust (M&O) informing him that the TCO is preparing basic IDS requirements for FY95. These requirements will be available in 5-6 weeks and will form the basis of the test support from the IDCS.

   b. The TCO prepares specifications limited to the capabilities of the Conspec or similar systems, instrument measurements for identified tests, and IDCS availability schedules. This specification should be identified as an element of the evolving test data acquisition equipment that will be expanded and refined as the testing program becomes more fully developed.

   c. The TCO informs the M&O that equipment such as the Conspec system has been identified as the appropriate system to support FY94-95 testing needs for the following reasons:

      - a proven commercially available design
      - being used at WIPP in a similar application
      - little or no design engineering required to procure the system
      - installation, expansion, and vendor liaison can be supported by REECo
      - USBM backup support available for special developments and review

Distribution:

F Homath,	LANL,	EES-13/LV,	MS 527
H Kalia,	LANL,	EES-13/LV,	MS 527
J Canepa,	LANL,	EES-13,	MS J521
EES-13/LV,	LANL,	MS 527	
CAG Files,	Carlton, OR		

Computer Applications Group, Inc.

13800 NE Merchant Road, Carlton, OR 97111

(503) 852-7214 (Voice & FAX)

MEMORANDUM

Mon, MAR 7, 1994

To: Bob Rosche

From: Gillian Hall

Subject: Integrated Data System (IDS) Preliminary Process Model and Features List

References: *IDS Data Acquisition Station Application Software Design Specification*
IDS Host Computer System Application Software Design Specification
IDS Host Computer System Design Specification
IDS Network Software Design Specification (Preliminary Versions)
FY 94 IDS Software Requirements

Upon review of the Referenced documents and vendor supplied product specifications and following a meeting attended by Bob Rosche, Jim Hall, and Gillian Hall, the following Preliminary Process Model and High Level Features List have been developed for review.

1.0 Preliminary Process Model

In developing the following IDS Preliminary Process Model, the Gane and Sarson version of the Data Flow Diagram (DFD) model is utilized. This model is heirarchical via process explosion and facilitates a graphical presentation of the proposed system from the context level to primitive processes. Supplementing the graphical model (DFD) is are brief textual descriptions of external entities.

An effort was made to maintain consistency with terminology and naming conventions adopted in source documents from which this process model was primarily derived. These sources are all contained in the documents referenced for this memorandum and are as follows:

1) *IDS DAS Data Flow Diagram* and *IDS Host Data Flow Diagram* presented in the referenced preliminary IDS Design Specification documents
2) Textual description of major processes and data stores represented on the diagrams in 1.
3) *IDS Detailed Functional Requirements* presented as Appendix A in the IDS Design Specification document.

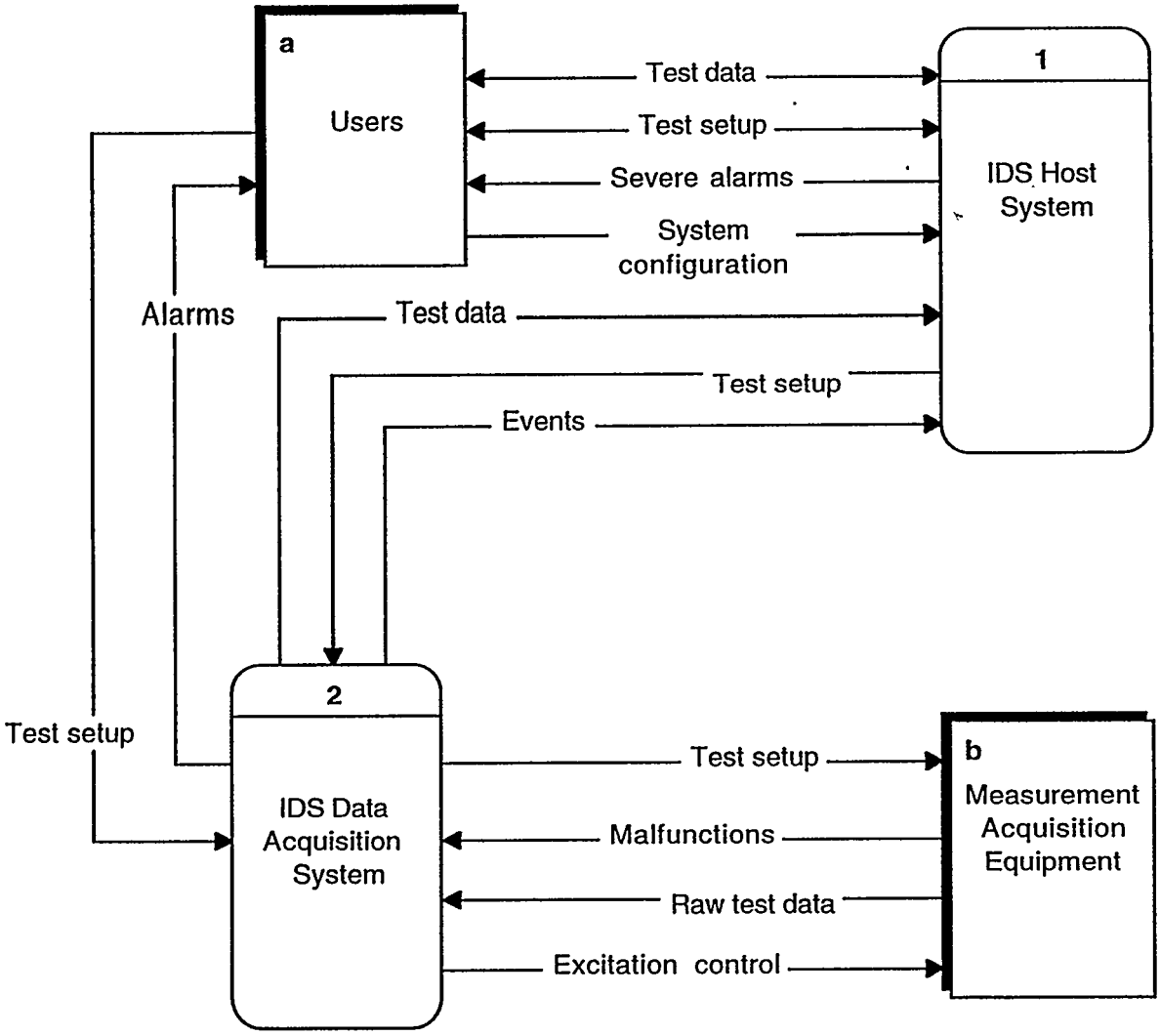
Because software and hardware purchase decisions are pending, the IDS process model presented here is incomplete (i.e., processes are not exploded to the primitive level). In addition, network management activities are largely ignored due to the high-level logical nature of this model. The IDS process model consists of the following diagram heirarchy:

0.0 Context

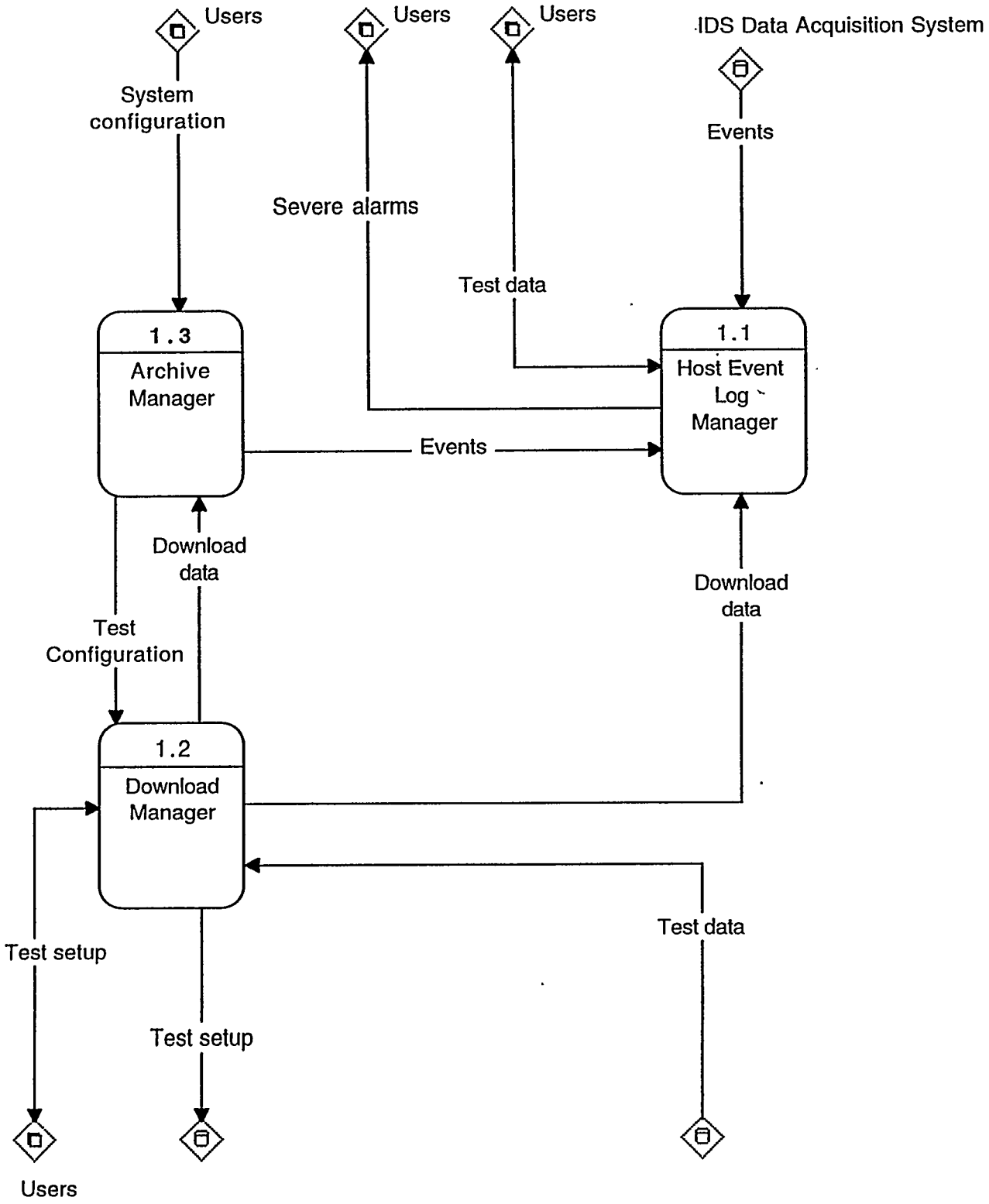
1.0 IDS Host System
- 1.1 Download Manager
- 1.2 Archive Manager
- 1.3 Host Event Log Manager

2.0 IDS Data Acquisition System
- 2.1 Test Setup Manager
  - 2.1.1 Test Setup Control
  - 2.1.2 Excitation Control Manager
  - 2.1.3 Test Setup Download Manager
- 2.2 Event, Activity, Malfunction Manager
  - 2.2.1 Log Events
  - 2.2.2 Route Events
- 2.3 Data Collection Manager
  - 2.3.1 Collect Test Data
  - 2.3.2 Convert Test Data
  - 2.3.3 Strore Test Data
- 2.4 Media Backup Manager
  - 2.4.1 Perform Backup
  - 2.4.2 Perform Restore

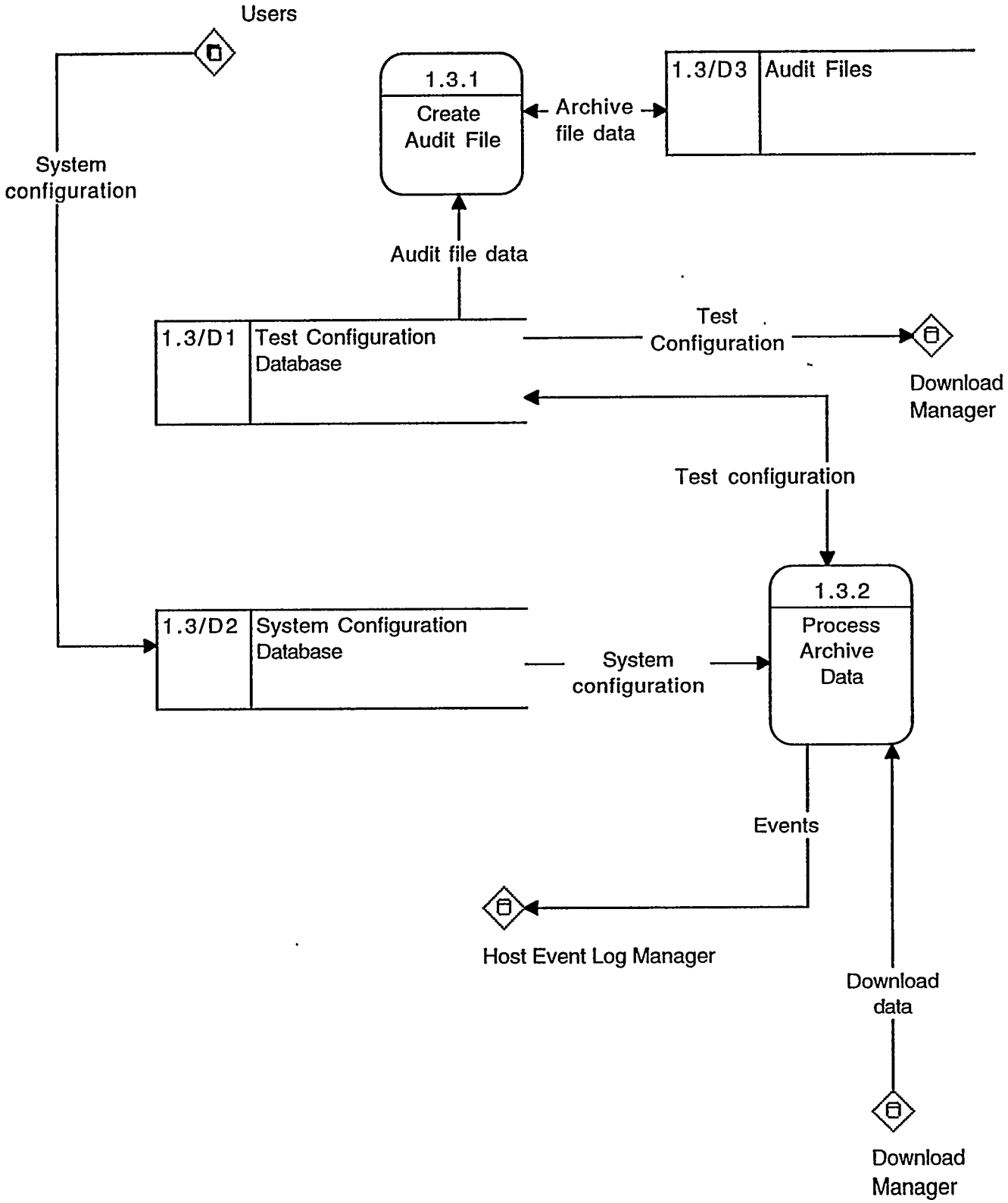
Reservations regarding the presented process model stem primarily from vendor product specifications currently under review. While the process model presented conforms well to currently available descriptions of the IDS project, its scope, and function, it fails to model any of the proposed vendor products or to describe features identified as important to the IDS designers.



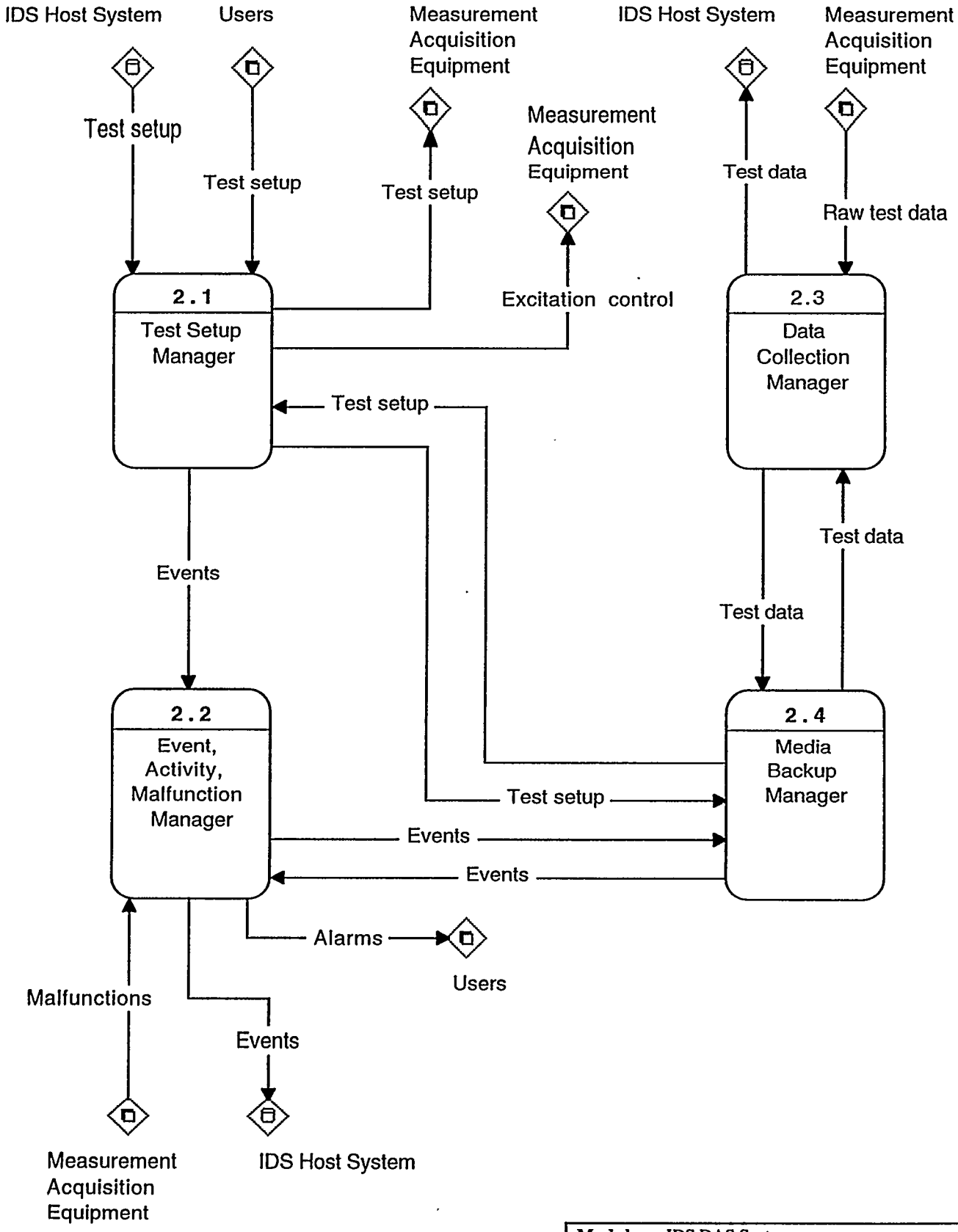
Module: Context
Drawn By: Computer Applications Group, Inc.
Revision Date: Fri, Mar 11, 1994 - 9:07 AM



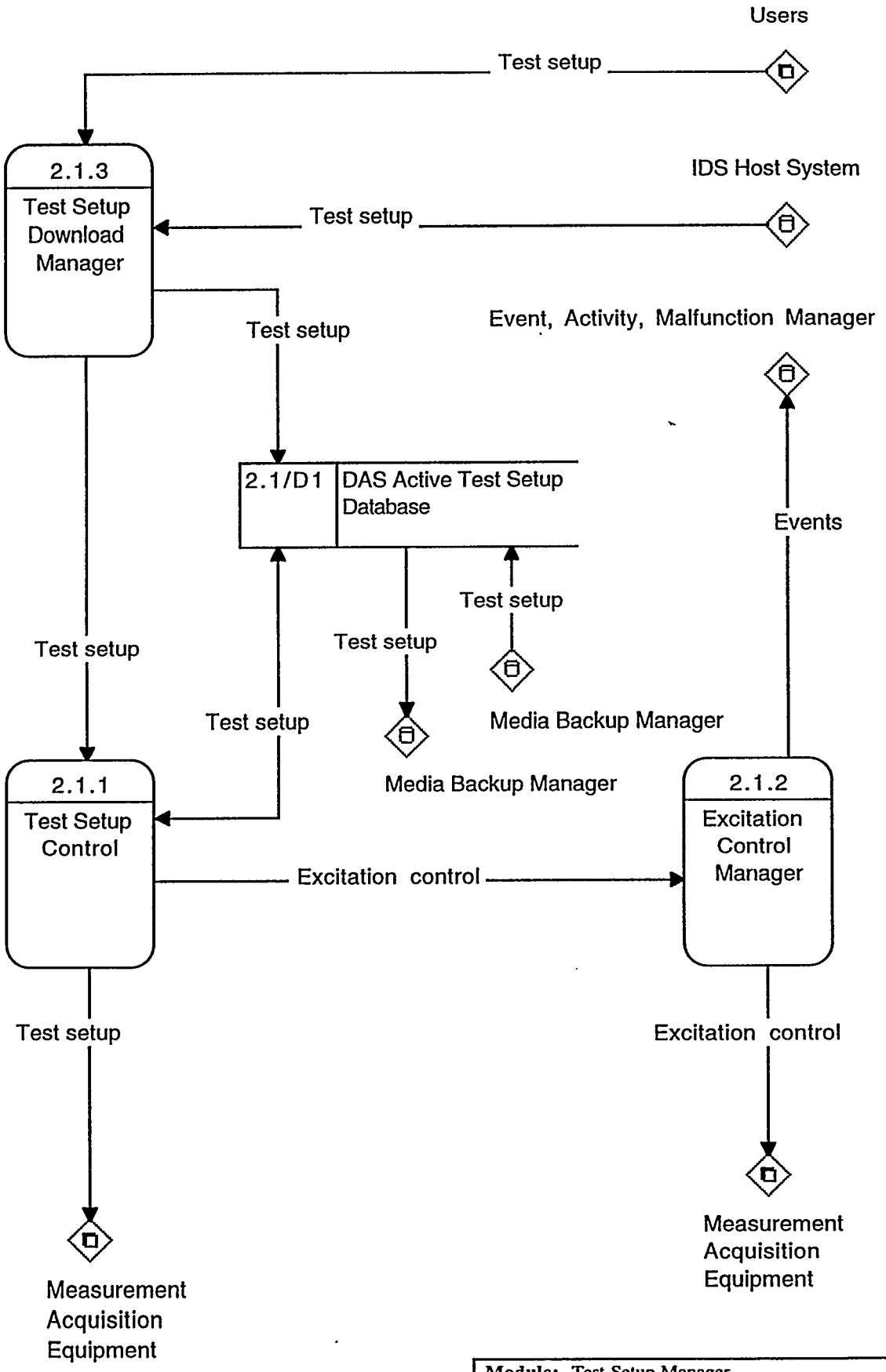
Module:	IDS Host System
Drawn By:	Computer Applications Group, Inc.
Revision Date:	Fri, Mar 11, 1994 - 9:07 AM



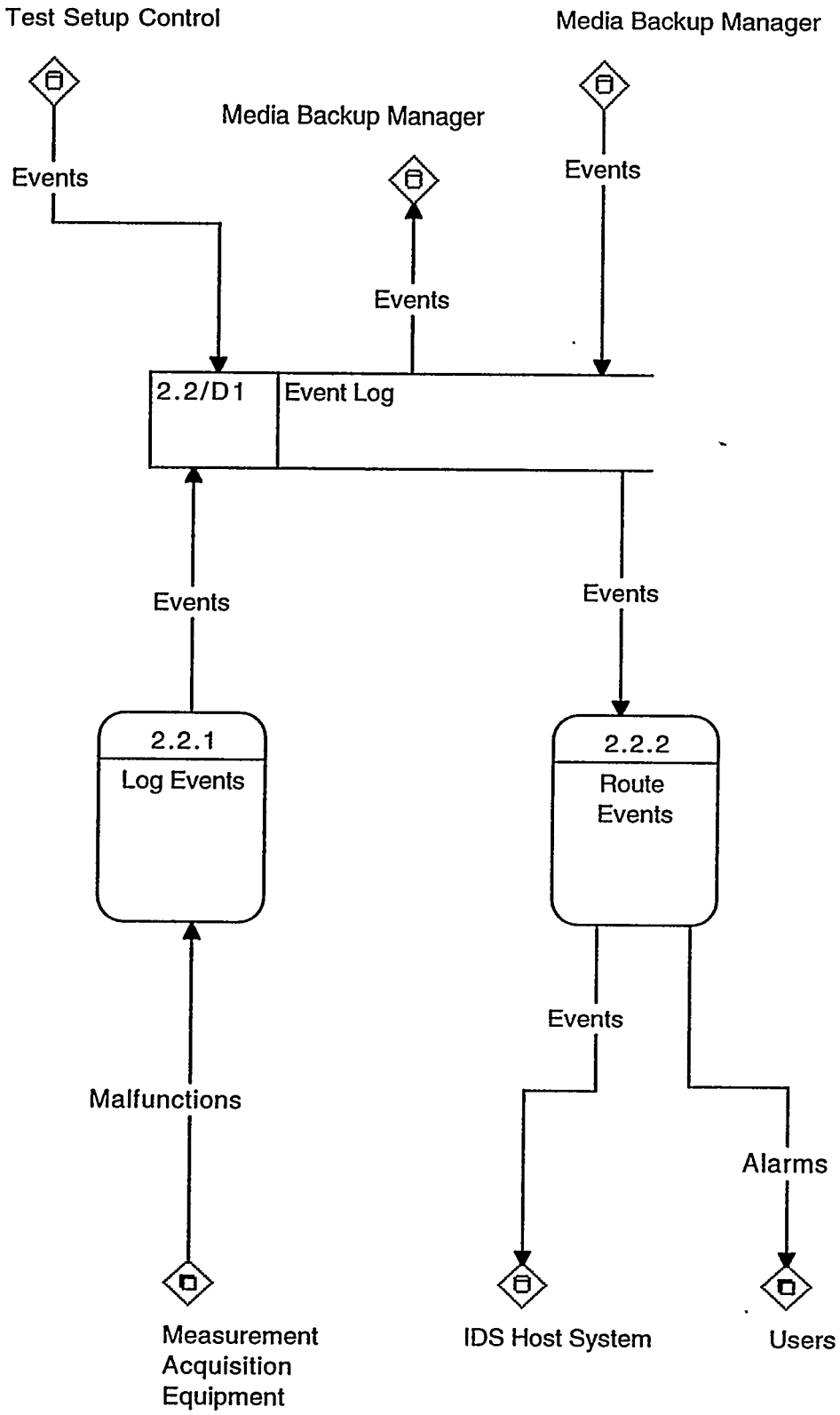
Module:	Archive Manager
Drawn By:	Computer Applications Group, Inc.
Revision Date:	Fri, Mar 11, 1994 - 9:07 AM



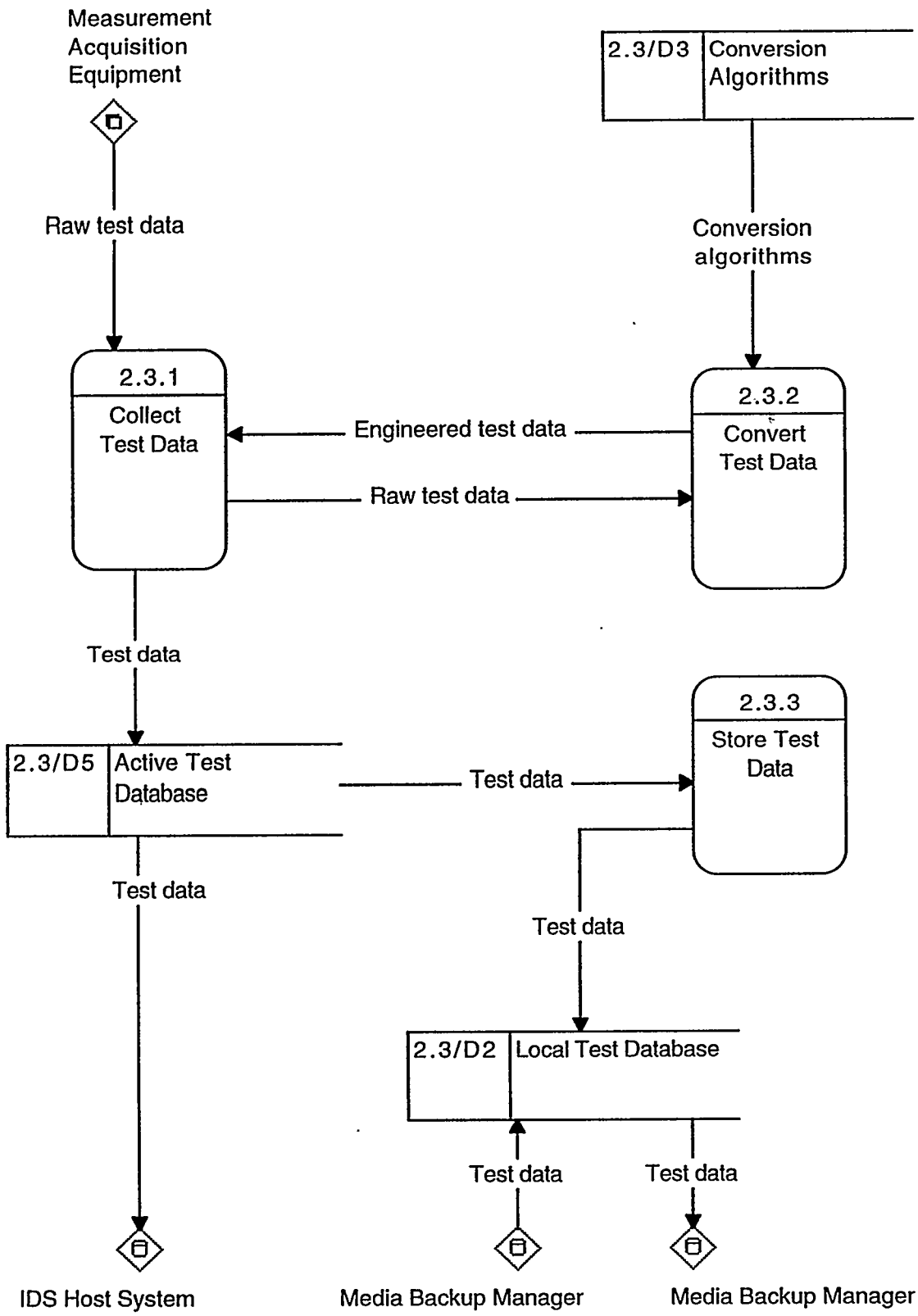
Module:	IDS DAS System
Drawn By:	Computer Applications Group, Inc.
Revision Date:	Fri, Mar 11, 1994 - 6:52 AM



Module: Test Setup Manager
Drawn By: Computer Applications Group, Inc.
Revision Date: Fri, Mar 11, 1994 - 6:52 AM

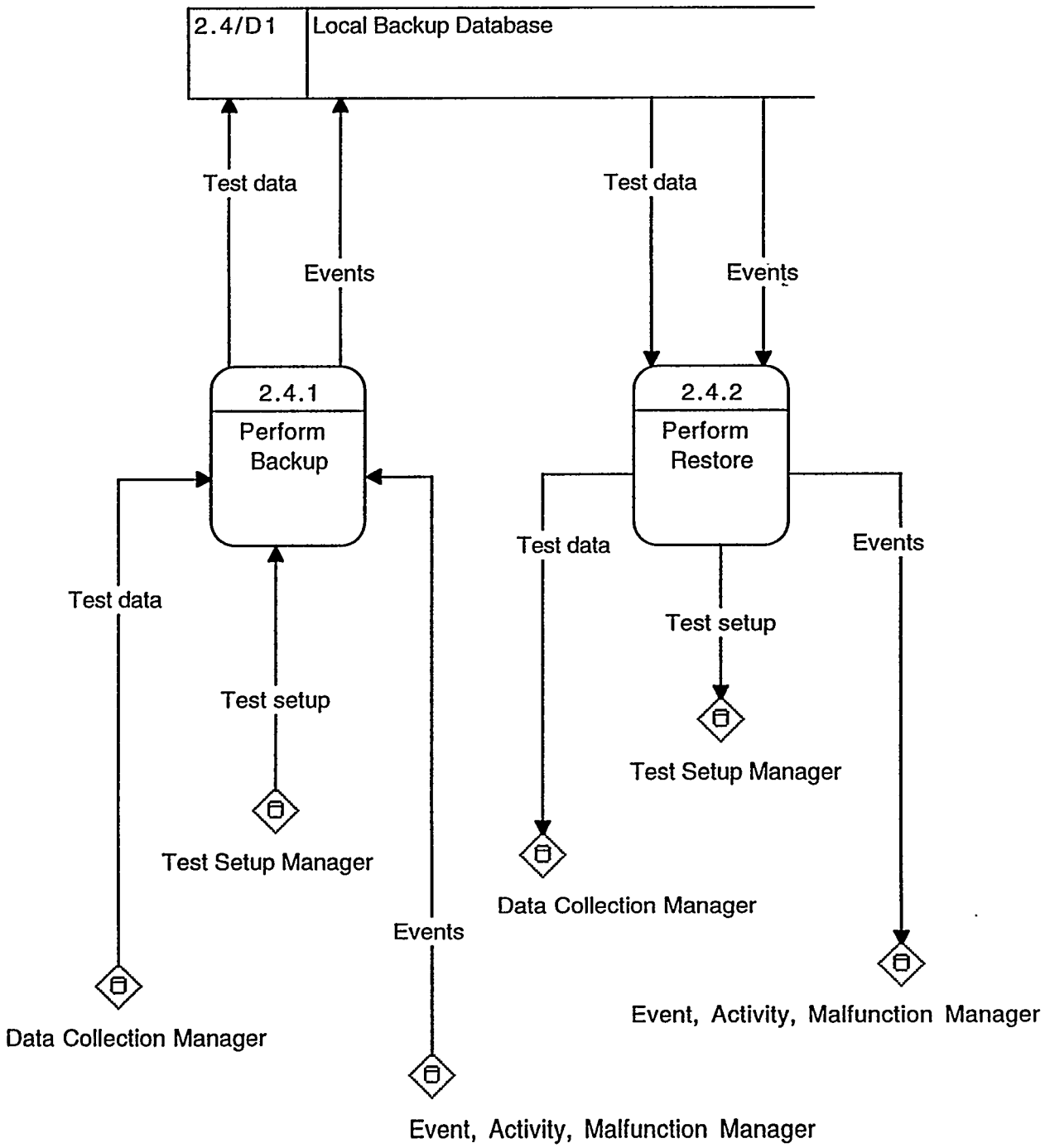


Module: Event, Activity, Malfunction Manager
Drawn By: Computer Applications Group, Inc.
Revision Date: Fri, Mar 11, 1994 - 6:52 AM



Module: Data Collection Manager
Drawn By: Computer Applications Group, Inc.
Revision Date: Fri, Mar 11, 1994 - 9:07 AM

10/5/12



Module:	Media Backup Manager
Drawn By:	Computer Applications Group, Inc.
Revision Date:	Fri, Mar 11, 1994 - 6:52 AM

Integrated Data System (IDS) Application Software Evaluation Criteria

Product Name:

Manufacturer:

Check all boxes that apply to product under consideration —

Product Type

❑ User Workstation ❑ Data Acquisition Station ❑ Database Management ❑ Host/Server

1. Internetworking & Communication Protocols
   - ❑ TCP/IP
   - ❑ DECnet
   - ❑ Token Ring
   - ❑ Ethernet
   - ❑ Novell
   - ❑ Other: _____

2. Native Platforms
   - ❑ DOS
   - ❑ Windows
   - ❑ Macintosh
   - ❑ OS/2
   - ❑ Unix (version: _____)
   - ❑ VMS
   - ❑ Proprietary

3. Instrument (I/O) Drivers Supported:
   - ❑ Customizable
     - ❑ No programming required
     - ❑ Programming required (language: _____)
   - ❑ Downloadable
   - ❑ Sufficient I/O drivers included
   - ❑ Engineered data conversions
     - ❑ Simple conversions (ax + b)
     - ❑ Complex conversions

4. Database Management
   - ❑ Distributed architecture
   - ❑ Supports SQL (interface with SQL-based relational DBMSs)
   - ❑ Creates data files (no DBMS)
   - ❑ Flat file database
   - ❑ Relational database
   - ❑ Object-oriented database (supports complex objects, inheritance, polymorphism, etc.)
   - ❑ Proprietary database
   - ❑ Supports multimedia attributes
     - ❑ Motion video
     - ❑ Still video
     - ❑ Sound
     - ❑ Graphics
   - ❑ Query/Update execution triggers
     - ❑ Time-based
     - ❑ Event-driven
   - ❑ Alarm trace capabilities

5. Remote Access
   - ❑ On-demand read-only access to test data
   - ❑ Modem access
   - ❑ Remote data collection
   - ❑ Remote input of configuration data for:
     - ❑ system
     - ❑ instrument
     - ❑ test

Continued on back...

6. Access Security
   - ❑ Auto dial-back for modem access
   - ❑ Access activity logging facility
   - ❑ User levels (user privilege control)
   - ❑ Password security
   - ❑ Card access
   - ❑ Other: _____

7. Data Protection
   - ❑ System mirroring
   - ❑ Incremental backup
   - ❑ Alternate data storage when database offline
   - ❑ Other: _____

8. User Shell
   - ❑ Allows custom configuration
     - ❑ No programming required
     - ❑ Programming required
       (language: _____)
   - ❑ Allows remote test setup and operation
   - ❑ Graphical user interface
   - ❑ Report generation possible
     - ❑ Incremental data
     - ❑ Event logs
     - ❑ Status reports
   - ❑ Presentation features
     - ❑ Graphs
     - ❑ Color
     - ❑ Type faces
     - ❑ WYSIWYG
   - ❑ Data analysis possible
   - ❑ Allows manual data entry
   - ❑ Data import from other applications
     List Applications: _____
     _____
     _____
   - ❑ Data export to other applications
     List Applications: _____
     _____
     _____

9. General
   - ❑ Provides event/activity log facility
   - ❑ Allows auto-boot to Data Acquisition Mode
   - ❑ Alarm capabilities
     - ❑ Alarm levels (How many? _____)
     - ❑ Unique response for each level
   - ❑ Auto dial-out on alarm
   - ❑ Activity recovery from log upon boot-up

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.
13800 NE Merchant Road
Carlton, OR 97111
503 852-7214 (Voice & Fax)

MEMO

CAG: 919404701
LANL Subcontract: 9–X52-Z9658–1

Wed, Feb 16, 1994

To: Fred Homuth
From: Jim Hall
Subject: ESF DR Version 1 IDS Appendix B Update and disk w/MSWord file

I have completed the IDS update to the ESF DR Appendix B for Revision 1 to patch IDS requirements back into the ESF DR. This is intended to be a temporary patch and does not include references to necessary details of test data acquisition requirements (i.e., channel count, accuracy, etc) that should be included in Revision 2 coming up.

The TCO is responsible for all revisions to IDS references in the ESFDR body text and all of Appendix B. Our agreement with the M&O is that they write the Revision 1 insert into the ESFDR body text as a temporary patch to cover their current IDS work. Their patch turned out to be very extensive and was moved to Appendix B by Ken Ashlock, ESF DR editor, and Ashlock wrote a one sentence body text insert referencing Appendix B for IDS details. The original M&O submittal has been extensively modified to reflect current IDS issues and I recommend that you should submit this revision directly to Ashlock as the TCO Appendix B Revision 1 IDS patch, bypassing the M&O. This will resolve all questions about responsibilities for revising IDS sections of the ESFDR.

Review the text and forward your approved copy to Ken Ashlock with a WordPerfect (IBM PC) file on disk.

I talked to Ken Ashlock today and told him of my recommendation that the TCO submit this information directly to him and he agreed. He also related to me that his group's schedule for ESF DR revisions has slipped dramatically. There will only be 1 revision this FY (Rev 1) and it is due in September. In the meantime they are working on an unscheduled documentation of all requirements in the top three YMP defining documents to satisfy an outstanding CAR. We will probably be involved with providing information into this activity to support testing and IDS soon.

Copies with Appendix B Update text attachment only:

N Elkins,	LANL,	EES-13/LV,	MS 527
H Kalia,	LANL,	EES-13/LV,	MS 527
J Canepa,	LANL,	EES-13,	MS J521
EES-13/LV,	LANL,	MS 527	
CAG Files,	Carlton, OR		

INDEPENDENT MONITORING OF TECHNICAL ACTIVITIES IN SUPPORT OF THE YUCCA MOUNTAIN PROJECT

1.0 PURPOSE

The purpose of this procedure is to define a uniform method for 1) planning independent monitoring of technical activities by Los Alamos National Laboratory (LANL) technical staff, in support of work conducted for the Yucca Mountain Project (YMP); and 2) documenting the results and recommendations from both planned and unplanned monitoring activities, and disseminating such documents to affected project particpants for their appropriate action. General technical monitoring support is provided by LANL as a service to the Department of Energy (DOE) and all YMP participants, and is intended to be independent and separate from all other planned inspections, tests, surveillances, audits, or assessments.

2.0 SCOPE

This procedure applies to all LANL technical staff performing planned or unplanned independent monitoring functions related to YMP activities. This procedure permits recommendation for (**but does not authorize or direct the performance of**) subsequent actions that may be initiated by others from review of disseminated Monitoring Reports (e.g., the initiation of design change requests, discrepancy reports, or corrective action requests). Any such actions must be initiated under applicable procedural controls established by the receiving organization, subject to the requirements of DOE/RW/0333P, the Quality Assurance Requirements and Description (QARD; DOE/OCRWM, 1992). Activities conducted pursuant to the requirements of this procedure shall in no way be construed to replace similar functions that may be defined by surveillance, inspection, Quality Assurnance (QA) audit, or testing procedures.

3.0 REFERENCES

DOE/OCRWM, 1992; DOE/RW/0333P; Quality Assurance Requirements and Description; U.S. Department of Energy/Office of Civilian Radioactive Waste Management, Washington, D.C.

4.0 DEFINITIONS

4.1 Monitoring

In the context of this procedure, monitoring is defined as the independent observation at any stage of any technical activity conducted for the YMP. Monitoring activities may be planned or unplanned, but results shall be documented and disseminated in the same way, as described in Section 6.3

5.0 RESPONSIBILITIES

5.1 LANL Technical Staff

When so authorized as part of their individual personnel qualification documents or specific YMP work assignments, LANL technical staff are responsible for 1) performing unplanned monitoring activities using their best professional judgement; 2) performing planned monitoring activities in compliance with approved Monitoring Instructions, as described in Section 6.1; and 3) documenting their observations and recommendations and submitting them to the LANL Technical Project Officer for review and approval, as described in Section 6.2.

5.2 LANL Technical Project Officer

The LANL Technical Project Officer (TPO) shall, at his/her discretion, be responsible for preparing and distributing requests for planned monitoring activities to LANL technical staff. The TPO is responsible, in conjuction with the LANL QA representative, for reviewing and approving all Monitoring Reports from both planned and unplanned monitoring activities, and for disseminating such reports to appropriate recipients for action or information.

5.3 LANL QA Representative

The LANL QA representative is responsible, in conjuction with the TPO, for reviewing and approving all Monitoring Reports from both planned and unplanned monitoring activities, and for recommending dissemination of such reports to QA representatives of the monitored organization if Monitoring Reports indicate the existence of potentially nonconforming conditions.

6.0 PROCEDURE

The requirements of this procedure are summarized in the flowchart provided as Figure 6-1, and are described in detail in the following Sections.

6.1 General Considerations for Monitoring Activities

Regardless of whether or not a monitoring activity is planned or unplanned, technical staff charged with YMP monitoring activities should endeavor to minimize, to the extent possible, any potenitally disruptive or deleterious effects that the activity may have on work in process. Personnel shall abide by the same site-specific health and safety and/or access control restrictions that apply to the monitored organization, without exception. Monitoring personnel shall consider and document the following minimum items, as appropriate for the activity being monitored:

1) the configuration status of observed items, equipment, or system components;

2) the calibration status of measuring and test equipment;

3) environmental conditions during period of observation, including temperature, humidity, moisture, construction activities, dist and/or debris, and equipment condition, contamination, or damage;

4) personnel contacted and/or visitors to the monitoirng site;

5) unsafe conditions or conditions potentially deleterious to the quality or integrity of data, items, equipment, or construction;

6) the start and stop times of monitoring activity;

Field or laboratory notes may be made in bound, weather-resistant notebooks and later transcribed into final MRs.

6.2 Preparation of IDS Monitoring Instructions for Planned Monitoring Activities

If specific monitoring activities are deemed necessary by the by the LANL TPO, or if specifically requested by DOE or other YMP participants, Monitoring Instructions (MIs) shall be prepared by the TPO or his/her designee. MIs shall serve to authorize and direct specific monitoring activities; they may be prepared in standard internal memorandum format, but, at a minimum, must be dated and signed, must be identified as MIs, must cross-reference this procedure, and must include the following:

1) identification of the recipient (i.e., the technica staff memeber requested to perfrom the monitoring activity);

2) a brief description of the technical scope of the monitoring activity, with references to necessary supporting documentation as appropriate;

3) the projected schedule for the activity, as negotiated with the management of the organization or activity to be monitored, including the expected completion date for submittal of the Monitoring Report (MR);

4) identification of any liaison contacts with the monitored organization or other participating organization, as appropriate for confirming acceptable monitoring dates/times; and,

5) as appropriate, the specific areas of focus or emphasis that shall be specifically addressed in the monitoring activity and documented in the MR.

6.4 Performance of Unplanned Monitoring

When so authorized as part of individual personnel qualification documents or specific YMP work assignments, LANL technical staff may, at their discretion, document their technical observations of YMP activities in compliance with this procedure. Technical observations shall be guided by best professsional judgement in lieu of the MIs required for the planned monitoring of specific YMP activities. MRs prepared to document unplnned monitoring activities shall address the minimum requirements of Section 6.1 and shall be submitted to the TPO for review and approval as required by Section 6.7.

6.5 Performance of Planned Monitoring Activities

When so authorized by receipt of an MI, LANL technical staff shall conduct planned monitoring activites in strict compliance with MI requirements and the minimum considerations of Section 6.1. All technical observations shall be documented in MRs prepared in compliance with Section 6.6, and submitted to the TPO for review and approval as required by Section 6.8.

6.6 Preparation of Monitoring Reports

Monitoring Reports (MRs) shall be prepared in standard memorandum format from the technical staff memeber personnel performing the monitoring activity to the TPO, with a copy to the LANL QA representative. At a minimum, report format and content shall include the following:

1) a brief description of the subject or purpose of the monitoring activity, identified

as either "planned" or "unplanned";

2) the date and start/stop times of the monitoring activity;

3) descriptions, calibration status, and serioal numbers of significatn measuring and test equipment items;

4) as applicable, facility equipment or configuration items (identify by drawings, design specifications, software version number, or other controlled means);

5) as applicable, the observed testing activity, by name and responsible PI;

6) identification of personnel contacted, with their organizational associations;

7) narrative discussion of monitoring results (in the format requested if a planned activity) with supporting information or data appended as appropriate;

8) recommendations for further monitoring or other actions, as appropriate; and

9) signature and date blanks for documenting review and approval by the LANL TPO and QA representative;

10) space for identifying distributees (TPO/QA representative to provide names);

11) space for identification of any further LANL action deemed necesary by the TPO and/or QA representative.

6.7 Review of Monitoring Reports

All MRs shall be reviewed and approved by the LANL TPO and QA representative prior to filing in the project QA records or dissemnation for further action. If the report is incomplete or unclear, it shall be returned to the originator for correction or addition of information. Based on the observations made, the TPO shall determine which YMP participating organizations and individuals should receive copies, and shall document the distribution list on the MR. If the observed condition indicates a potential nonconformance, the QA representative shall identify the appropriate QA contact in the monitored organization, and they shall be added to the distribution list; indiciations of serious nonconformances shall require immediate contact with the management of the affected organization. Any additonal LANL-specific action required as a result of the review shall be initiated by the TPO or QA representative, as appropriate; the action required shall be briefly noted on the MR. The approved MR shall be signed by the TPO and QA representative;

approvals may be documented by attached telephone records, as necessary.

6.8 Distribution of Monitoring Reports

Copies of approved MRs shall be automatically distributed to the LANL Resident File/Local Records Center, the LANL QA representative, the LANL TPO, the primary Mangement & Operations contractor (M&O) liaison, and the other distributees identified on the aproved MR, for their information and/or appropriate action.

7.0 RECORDS

QA records produced from implementation of this procedure will include MIs, when required for planned monitoring activities, and final approved MRs.

CAG

Internal Document
DO NOT REFERENCE
Fri, Jan 21, 1994

DISCUSSION DRAFT - Rev 1

TCO DATA COORDINATION PLAN

Distribution: N Elkins
D Boak
A Mitchell
F Homuth
R Oliver
R Kovach

Please add comments, ideas, new issues etc as you read and review this draft. We will meet again in about 2-weeks to discuss this draft and your comments.

1.0 PURPOSE

The purpose of this plan is to define uniform methods for accomplishing the following:

1. develop test planning documents that identify and verify high level project requirements for test data, proposed test data sets, and TCO data monitoring activities (if any) of each portion of Participant tests and engineering monitoring programs in the ESF

2. document and disseminate the resulting planning information and recommendations in Test Planning Package (TPP), Job Package (JP), and periodic reports and memos covering planned and unplanned test activities

3. monitor each testing activity to verify compliance with the documented test planning data set requirements and keep participants informed of deviations

4. assist individual PIs to identify instruments and data acquisition equipment and methods as requested by Participants as part of monitoring activities

5. maintain records for tracking data coordination processes in an administrative Test Data Coordination Database (TDCDB) located and maintained in the TCO with access from the TCO and FOC

This data coordination function is provided by LANL as an adjunct to on-going, DOE defined, TCO test planning activities. This administrative activity includes preparation and support of TPP and JP documents that are the responsibility of the LANL TCO. These activities are independent and separate from existing or planned Study Plans, tests, QA inspections, surveillances, audits or data management tasks by Participants or DOE. Assistance in specifying data acquisition methods and equipment will be provided as requested by Participants. The resulting information from this activity will be contained in, or reported in, the following places by the TCO:

1. Test Planning Packages (TPPs)
2. Job Packages (JPs)
3. Periodic Test Coordination reports
4. Test Monitoring and Data Coordination reports
5. LANL reports, letters, and memos
6. TCO TDCDB maintenance

2.0 SCOPE

This plan applies to all LANL technical staff involved in developing test data coordination and monitoring activities as part of planning document preparation and subsequent follow-up for planned or unplanned tests. These activities are related to test planning, installation, operation and data monitoring during and/or after installation of tests or engineering monitoring in the ESF. This plan permits recommendation of data monitoring planning and field activities, subsequent actions that may be initiated by others for minor modifications in participant test plans, data acquisition methods, modifications to participant data collection items, revised test controls, and other test related issues not yet identified. Any actions initiated that are based on activities described in this plan by participants shall be under applicable procedural controls established by the participant organization. Activities conducted pursuant to this plan shall in no way be construed to supplant similar functions that may be defined by specific Participant planning or testing procedures covering design, specifications,installation, and operation of Participant equipment or Participant or DOE field activity plans. Tracking details and supporting information (as required) will be entered and maintained in the TDCDB with access from the TCO and FOC.

Information describing Data Coordination and Monitoring issues, requirements, and activities will be contained in the following documents:

1. TPP - include general informational links with SCP level YMP documents

2. JP - Detail the relationship between SCP requirements and the planned test elements. Evaluate each PI Test Plan to verify that planned data sets will meet identified SCP requirements. If data deficiencies are found, work with PIs to add test features to generate missing data sets to meet SCP requirements. Identify specific data sets to be produced by participants that support specific SCP items.

3. On-going interactions with PIs, documented with memos, letters, and reports, to ensure that test planning and results are providing the expected data supporting TPP requirements.

4. TDCDB Users Manual

4.0 DEFINITIONS

4.1 Data Coordination

Data coordination includes all activities associated with identification of data requirements for a specific test and verification that the identified data sets containing the required data.

4.2 Monitoring

In the context of this procedure, monitoring is defined as the development of data acquisition equipment/system specifications and/or independent technical observation of the performance of data acquisition activities. Monitoring activities may be planned or unplanned, but results shall be documented and disseminated in the same way, as described in Section 6.3.

4.3 Term of Data Coordination and/or Monitoring activities

The term of data coordination activities associated with each Test Planning task is defined by the continuance of procedural activities including development of the TPP, JP, and periodic reports and supporting documentation before and after test installation in the ESF and prior and until the end of the Test Planning task.

5.0 RESPONSIBILITIES

5.1 LANL Technical Data Coordinator

- responsible for developing data coordination sections of TPP and JP documents, supporting verification studies, and contributing data coordination portions of related reports and other documents

- responsible for documenting planned and unplanned data coordination and related test monitoring activities in the manner described in Section 6.2

- responsible for performing unplanned data coordination and related test monitoring activities in compliance with best professional judgement

- responsible for developing test data acquisition equipment specifications and related studies and documentation as requested by Participants

- responsible for developing specifications for, implementing, and maintaining the TDCDB.

5.2 LANL TPO or Designee

- at their discretion, responsible for preparing data coordination and related test monitoring requests for planned monitoring activities by LANL technical staff

- responsible for reviewing and approving all documents, reports, and for disseminating such documents and reports to appropriate recipients for action or information

5.3 LANL QA representative

- responsible for reviewing and approving all TPPs, JPs, and other related QA level test planning documents, and for disseminating such reports to appropriate recipients for action or information

- responsible for surveillances of FOC DRC files to confirm that data is being entered into these files in conformance with TPP and JP requirements

- responsible for advisory interaction with participants and FOC personnel to alert them of non-compliances in maintaining DRC file contents

6.0 DATA COORDINATION AND MONITORING ACTIVITIES

6.1 Data Coordination Activities

data coordination personnel activities will include the following tasks:

1. identify high level (i.e., YMP SCP) data requirements associated with each test

2. develop criteria for participant identified data sets generated from each test

3. identify deficiencies in participant data acquisition plans (if any) and suggest test planning modifications to the TCO Test Coordinator

4. develop data coordination sections for inclusion in TPP, JP, reports, and supporting memos and letters

5. monitor testing activities to verify that data coordination requirements are met and report these activities to the Test Coordinator

6. Enter data tracking and distribution information in the TDCDB

6.2 General Considerations for Data Monitoring Activities

personnel charged with data monitoring activities should consider the following items for planned or unplanned tests, as appropriate:

1. at the request of participants, assist individual PIs to identify instruments, wiring methods, data acquisition equipment and methods, equipment installation, and operation and maintenance issues for individual tests

2. configuration status of system components, as applicable

3. calibration status of test instruments, as applicable

4. status of test data

5. personnel contacted/organizations involved

6. start and stop times of monitoring activity

7. notes may be made in bound office notebooks, weatherproof field notebooks or electronic note pads, later transcribed or electronically transferred into final Monitoring Reports

8. monitoring activities should, to the extent possible, be conducted to cause minimal impact to work in process

6.3 Preparation of Monitoring Reports

at a minimum, report format/content shall include the following information:

1. subject/purpose, date, and start/stop times of monitoring activity

2. identification of applicable data acquisition items (identify by drawings, design specifications, software version number, etc.)

3. applicable test activity, by name and responsible PI, as applicable

4. identification of personnel performing monitoring and personnel contacted, with their organizational associations

5. identification of the monitoring activity as planned or unplanned; if planned, control or identification numbers shall be recorded

6. narrative discussion of monitoring results (in the format requested if a planned activity) with supporting information or data appended as appropriate

7. recommendations for further monitoring or other actions, as appropriate

6.4 Distribution of Data Coordination and Monitoring Reports

- automatic distribution to Resident File, LRC, LANL QA representative, LANL TPO, and M&O Liaison (as designated by Test Coordinator)

- distribute to PIs, DOE, or other parties for their information and/or appropriate action, as directed by reviewers (i.e., the LANL TPO and QA representative)

7.0 RECORDS

- Data Monitoring Reports (when part of monitoring activity and activity warrants an individual report)

- Data Monitoring Instructions (when required for planned monitoring activities)

- Data Coordination Reports (when activity warrants an individual report)

CAG

DRAFT OUTLINE - Rev 1

ESF DATA COORDINATION PLAN

1.0 PURPOSE

The purpose of this plan is to define uniform methods for accomplishing the following:

1. identification and verification of planning for installation, operation, and data monitoring of each portion of Participant tests and engineering monitoring programs in the ESF

2. document and disseminate the resulting information and recommendations in Test Planning (TP), Job Package (JP), and periodic reports and memos covering planned and unplanned monitoring activities

3. data monitoring

This data coordination function is provided by LANL as an adjunct to on-going to DOE defined TCO test planning activities. This is an administrative activity supporting preparation and support of Test Planning and Job Package document that are the responsibility of the LANL TCO. These activities are independent and separate from planned QA inspections, tests, surveillances, audits or data management tasks by participants or DOE. The resulting information from this activity will be contained in or reported in the following places by the TCO:

1. Test Planning Packages (TPPs)

2. Job Packages (JPs)

3. Periodic Test Coordination reports

4. LANL reports, letters, and memos

2.0 SCOPE

This plan applies to all LANL technical staff involved in test planning document preparation and subsequent follow-up for planned or unplanned tests. These activities are related to test planning, test installation, test operation and data monitoring during and/or after installation of tests or engineering monitoring in the ESF. This plan permits recommedation of subsequent actions that may be initiated by others for minor modifications in participant test plans, modifications to participant data collection items, revised test controls, and other test related issues not yet identified. Any actions initiated based on activities described in this plan by participants shall be under applicable procedural controls established by the participant organization. Activities conducted pursuant to the requirements of this procedure shall in no way be construed to supplant similar functions that may be defined by specific Participant installation, operation, or test procedures.

3.0 REFERENCES

DOE, 1990; DOE/RW-0214, Quality Assurance Requirements Document for the Civilian Radioactive Waste Management Program; U.S. Department of Energy/Office of Civilian Radioactive Waste Management, Washington, D.C.

4.0 DEFINITIONS

4.1 Monitoring

In the context of this procedure, monitoring is defined as the independent technical observation of the performance of one or more system items or configuration items (in the case of items formally accepted ito the ESF configuration), after installation in the ESF and prior to, concurrent with, or after the completion of operational acceptance tests. Monitoring activities may be planned or unplanned, but results shall be documented and disseminated in the same way, as described in Section 6.3

5.0 RESPONSIBILITIES

5.1 LANL Technical Staff

- responsible for performing planned monitoring activities in compliance with approved monitoring instructions (developed as described in Section 6.1
- responsible for performing unplanned monitoring activities in compliance with best professional judgement
- responsible for documenting planned and unplanned monitoring activities in the manner described in Section 6.2

5.2 LANL TPO or Desginee

- at their discretion, responsible for preparing monitoring requests for planned monitoring activities by LANL technical staff
- responsible for reviewing and approving all Monitoring Reports, and for disseminating such reports to appropriate recipients for action or information

5.3 LANL QA representative

- responsible for reviewing and approving all Monitoring Reports, and for disseminating such reports to appropriate recipients for action or information

6.0 PROCEDURE

6.1 Preparation of IDS Monitoring Instructions

if deemed necessary by the LANL TPO, Monitoring Instructions shall be prepared by the TPO or designee that, at a minimum, include the following planning information:

1. identification of the recipient
2. technical scope of the monitoring activity, with references to supporting configuration item documentation as appropriate
3. projected schedule for the activity, including expected completion date for submittal of the Monitoring Report
4. liaison contacts with other organizations, as appropriate for finalizing acceptable monitoring schedules
5. specific focus items to be addressed in the Monitoring Report, as appropriate
6. a control number and signature/date blank for documenting LANL TPO/desginee approval.

6.2 General Considerations for Monitoring Activities

planned or unplanned, personnel charged with IDS monitoring activities should consider the follwing items, as appropriate

1. configuration status of observed sustem components
2. calibration status of test instruments, as applicable

3. environmental conditions during period of observation (temperature, humidity, presence of water, construction activities, debris, equipment condtion/contamination/damage)

4. personnel contacted

5. unsafe conditions or conditions potentially deleterious to data quality or integrity

6. start and stop times of monitoring activity

7. notes may be made in bound, weatherproof field notebooks or electronic note pads, later transcribed or electronically transferred into final Monitoring Reports

8. monitoring activities should, to the extent possible, be conducted to cause minmal impact to work in process

6.3 Preparation of Monitoring Reports

at a minimum, report format/content shall include the following information:

1. subject/purpose, date, and start/stop times of monitoring activity

2. applicable IDS configuration items (identify by drawings, design specifications, software version number, etc.)

3. applicable test activity, by name and responsible PI, as applicable

4. identification of personnel performing monitoring and personnel contacted, with their orgainizational associations

5. identification of the monitoring activity as planned or unplanned; if planned, control numbers shall be recorded

6. narrative discussion of monitoring results (in the format requested if a planned activity) with supporting information or data appended as appropriate

7. recommendations for further monitoring or other actions, as appropriate

8. signature/date blank for the originator of the report

9. signature/date blanks for the report reviewers (see Section 6.4)

6.4 Review of IDS Monitoring Reports

- automatic review by LANL TPO or designee, LANL QA representative

- reports will be returned to orginator for correction only if incomplete or unclear
- any additonal LANL action required as a result of review documented by LANL TPO or designee

6.5 Distribution of Monitoring Reports

- automatic distribution to Resident File, LRC, LANL QA representative, LANL TPO, M&O liaison

- distribute to PIs, DOE, M&O QA, or other parties for their information and/or appropriate action, as directed by the reviewers (i.e., the LANL TPO and QA representative)

7.0 RECORDS

- Monitoring Instructions (when required for planned monitoring activities

- Monitoring Reports

Wed, Jan 12, 1994
VE IDS Alternative Descriptions

1. IDS/Original Concept

The Original Concept IDS is represented by the M&O DRD and supporting budget proposals presented to DOE over the past few months. This option includes basic system elements plus additional items added to supported projected activities in the future. Proposed implementation (FY94-FY95) includes a surface IDS computer for archiving data and controlling underground Data Acquisition Stations (DASs) units located at test sites through an extensive fiber-optic network. The design includes redundant network elements and central computer RAID hard disk drives to increase system availability (low outage time due to equipment failure). Includes provisions for significant user support options beyond basic functionality.

3. IDS-No Network/Independent DAS for Each Test, Electronic Data Storage, No Network Connection Between DAS Units or the Control/Archiving Computer

Utilizes IDS DAS units supplied by the M&O. DAS units are located at test sites and operate autonomously with local data storage. Does **not** include a network to link individual DASs to the IDS central computer at the surface. Data is manually transferred by Operations and Maintenance (O&M) or PIs from each DAS to the IDS central computer (sneaker net).

5. No IDS/Each Participant Develops Their Own Independent Organizational IDS

Each participant organization develops an independent data acquisition system.

6. IDS/Original Concept **Minus** Redundant Components

The system described in Option 1 above with the redundant networking and hard disk storage components deleted.

7. IDS-Turnkey/Commercial Vendor Provides the Complete ESF IDS Including Equipment, Installation, Maintenance, and Operation Based on a Performance Specification prepared by the M&O

The IDS including **all** related support and activities are procured from a commercial vendor based on a performance specification prepared by the M&O. All important IDS issues are covered by the procurement specification or negotiated after award. Changes, additions to, or termination of the task are

contractual issues. The vendor would have to support a YMP qualified QA program covering all IDS activities.

8. IDS-Spartan/Minimum Data System, Technically Sound but Includes only Components needed for Current Tasks with No Extras

   A pared down IDS system eliminating features not specifically requested or needed to support near term participant data acquisition. The fully functional IDS will be planned in phases consistent the level of support needed by the current FY testing program. System components would be scheduled for procurement based on the need to support testing activities as they are are actually implemented. Procurement of major system expansion components, such as the fiber-optic network and the surface based control computer, would be delayed until system management issues (limited access to DAS units for data retrieval and increasing data rates) determine the need to upgrade the system.

10. IDS-Full Bore/Integrate All Proposed IDS Functions and More into One Integrated Super IDS

    The system described in Option 1 above with **all** other ESF data acquisition activities (i.e., safety, construction contractor activities, security) included.

12. No IDS/Participant DAS Units With All Data Going Directly To Participants

    Each participant develops their own data acquisition systems with no design requirement constraints. All data goes directly to participants. There is no raw data backup at the ESF.

WBS 1.2.6.8.4
QA N/A

Computer Applications Group, Inc.

13800 NE Merchant Road, Carlton, OR 97111 (503) 852-7214 (Voice & FAX)

MEMORANDUM

CAG: 9193332201
LANL Subcontract: 9–X52-Z9658–1

Thu ,Nov 18, 1993

To: Fred Homuth
From: Jim Hall
Subject: Comments On March 1993 Version of the M&O IDS Engineering Plan

Due to an internal CAG clerical error these comments (created 09/13/93) were misplaced and not sent to the TCO until now. The comments are current and may still apply to the current EP revision. I suggest that a copy of this memo be forwarded to B Carlisle (M&O IDS) to be reviewed and used by R Rosche (M&O IDS) in preparation for the next EP revision.

General Comments

1. Ref. Section 1.2: The intended role of the Engineering Plan (EP) in the overall hierarchy of documents associated with the design and development of the IDS is very unclear, especially in relationship to the functions represented by the most recent versions of the Design Requirements Document (DRD) and Implementation Plan (IP). The EP should serve as the M&O's highest-level project management plan for the IDS; it should demonstrate the M&O's understanding of the IDS mission and, at a minimum, 1) lay out the hierarchy of documents that will be used to execute their IDS responsibilities; 2) identify the most critical features of the project [i.e., design/user interfaces with other organizations, configuration management requirements, data integrity requirements, phased deliverable requirements Fiscal Year (FY) and so forth]; and 3) provide the definitive schedule for the project. The EP should be prepared to serve as the primary work-controlling management document for the IDS, and should be invoked by the M&O as a contractual condition to Fluor Daniel. It should be absolutely unambiguous; it should not attempt to duplicate the detail found in the DRD, IP, or the M&O's QAPP, and should focus on the following points:

1) definition of the project scope in specific detail through FY 94, and in at least general terms through FY 96;

2) presentation of a concise conceptual model or basic design requirements summary, at a level that demonstrates the M&O's understanding of the IDS's function, the requirements of the LANL

FRD, its phased delivery requirements, and the importance of configuration management both to the success of the design and the integrity of the data acquired by the delivered system;

3) a clear definition of the organizational responsibilities of the M&O, Fluor Daniel, REECo, LANL, and DOE relative to the design, procurement, testing, and installation of the IDS, in FY 94 and beyond;

4) a list of the baseline requirements documents that must be reflected in the design, procurement, testing, and installation of the IDS, with brief descriptions of their specific relevance to the project;

5) a definitive project schedule for FY 94 that corresponds to the specific phases of ESF construction and testing activity that must be supported by IDS design, development, procurement, testing, and installation processes. The FY 94 schedule should be extended to include tentative schedules through FY 96 , with major milestones and deliverables identified

6) a high-level WBS dictionary [i.e., one tier above the level of detail provided in the LANL Functional Requirements Document (FRD)]

2. General Comment; because of the level of unnecessary or redundant detail included in this version of the EP, it is recommended that M&O reassess the overall purposes of the EP, the DRD, the IP, and the QAPP to ensure that their roles are well-defined, that all critical aspects of the project are properly planned (or that mechanisms are in place that will ensure that such planning is performed), that detailed discussions are are not redundant, and that consistent change control mechanisms are established that can accommodate the pace and the potentially changing needs of the project. Redundant details are a particular concern; as it is now written, the EP contains many details that conflict with similar presentations in the the latest versions of the IP and/or DRD. Since each of these documents have independent preparation and review lifetimes, it will be functionally impossible to keep them current and accurate if they contain redundant details. The suggested focus of these documents should be as follows:

EP - The EP should be the M&O's primary project management plan for the IDS, and should be focused on providing 1) a general definition of the project scope, 2) a concise conceptual model or basic design requirements summary; 3) a clear definition of inter-organizational responsibilities; 4) a list of baseline requirements documents; 5) a definitive schedule for the project, including descriptions of the specific phases of the project, by FY, with all major milestones and deliverable requirements identified; and 6) a high-level WBS dictionary. Please see General Comment 1.

DRD - The DRD should describe how the M&O/Fluor Daniel will implement the requirements of

the LANL FRD through the preparation of individual Design Specifications that will form the basis of procurement documents. It should present the IDS contractor's approach to the overall design of the system. It should identify the Design Specifications that will be required, any Design Studies that will be necessary to properly complete particular Design Specifications, and should cite or specifically describe the M&O/Fluor Daniel configuration management system controls that will apply throughout the project. It should also define the specific organizational interfaces and responsibilities affecting the design, development, procurement, testing, and installation of the IDS.

IP - the IP should be prepared to demonstrate the readiness of the IDS contractor to initiate system procurement activities, in the format specified by applicable DOE orders. It should be submitted for DOE approval after the DRD is approved, and after completion of all Design Studies and Design Specifications necessary for at least the long-lead portions of the FY 94 system deliverables. It should specifically identify the procurement, procurement acceptance/acceptance testing, and warehousing/material control interfaces and responsibilities of Fluor Daniel, the M&O, and REECo. Specific details contained in the EP, the DRD, individual Design Specifications, or the QAPP should be cited by reference.

QAPP - since the M&O's QAPP will be adopted for use by Fluor Daniel, it should be evaluated to ensure that it provides or identifies the specific managerial and procedural controls necessary to implement the M&O's/Fluor Daniel's IDS responsibilities as defined by the EP, IP, and DRD, at all functional levels.

Specific Comments

1. Ref: Section 1.1, paragraph 4; IDS design and development activities commenced long before FY 93. In addition, there are a number of significant errors in the description of the basic purposes of the IDS. As currently scoped, the IDS will service the needs of the Exploratory Studies Facility (ESF); whether or not the IDS will ever be used to manage the acquisition of data from the construction and operation of a geologic repository is problematical, and is entirely dependent on the results of the characterization effort and the suitability of the IDS design for the actual needs of the repository, many of which will not be known with certainty until the characterization phase is complete. It is suggested that no assumptions of this type be made in this plan; the EP should focus specifically on design and development of an IDS that addresses the information needs associated with ESF construction and testing.

2. Ref: Section 1.4; the discussion of project phases provided in this Section does not adequately

address the fact that the IDS must be designed, procured, tested, and installed as specific packages or portions of the overall system that will be delivered in phases as necessary to address the specific construction, testing, and operational phases of the ESF. The concept that the IDS must become functional in phases based on the construction and testing schedule is a significant design constraint; the "phasing" of the IDS project is driven by (and absolutely must be logically coordinated with) the overall operational needs, schedules, and purposes of the ESF. The costs associated with construction delays in projects of this type are beyond astronomical; adequate planning to ensure that IDS design and developmental issues do not cause ESF construction delays is absolutely crucial to the success of the project.

3. Ref: Section 1.4.1; at this point in time, FY 93 activities are something of a moot point; the DRD and IP are in review, but are not finalized. The section should be rewritten to specifically define FY 94 activities, considering the phased delivery needs of the ESF as noted in Specific Comment 2. It is suggested that this Section define the organizational interfaces between the M&O/Fluor Daniel and LANL, and define the specific portions or component packages of the IDS that must be delivered in FY 94.

4. Ref: Section 1.4.3; in paragraph 3, define the "IDS Supplier" as Fluor Daniel. Also, responsibilities for supplying the components of the IDS seem to be confused with responsibilities for procurement, acceptance, and testing.

5. Ref: Section 1.4.3; a task summary should be provided for all phases of activity, at least to the WBS level recommended in General Comment 1.

6. Ref: Section 1.5; the system description should be reviewed against the current version of the FRD for consistency. With regard to paragraph 2, especially the last two sentences, it should be noted that although sensor data specifications must be accommodated in the IDS design, the sensors themselves are not physically part of the system.

7. Ref: Section 1.6; see General Comment 1. The third sentence in the first paragraph is gratuitous, and should be deleted. The roles of the participating organizations in he development of the IDS are inadequately described, particularly in the case of LANL, since they will retain significant design control responsibilities throughout the project. The DOE's role must also the explained, especially with regard to the performance of configuration audits as part of the acceptance of individual deliverable system component packages.

8. Ref: Section 1.7; a detailed schedule should be provided as part of the EP; see General Comment 1. If no integrated ESF schedule is available, or at least a construction and testing schedule, it is very unclear how FY 94 system deliverables can be identified with any accuracy.. In addition, how can the manpower estimates in Appendix B be considered to be supportable, given the uncertainty regarding the system deliverables must be produced? In 1.7.1, given the number of organizations with a stake in the testing and use of the IDS, organizational interfaces and applicable design control mechanisms should be extremely well-defined, and should reference the DRD and/or QAPP for the necessary procedural detail. The holding of loosely scheduled project meetings to resolve the complex issues described in this section is an inadequate management approach, given the design control requirements of the OCRWM QARD and M&O's QAPP.

9. Ref: Section 2.1; it is unclear why this section was included. Mine safety requirements should be addressed in the context of the FRD, not the EP, which should describe in a general sense how the requirements of the FRD will be translated into an approved DRD and eventually into a delivered and accepted IDS.

10. Ref: Section 2.2; the organizational interfaces with LANL are poorly defined. In the second paragraph on page 8, if Fluor Daniel will be conducting design studies with input from external suppliers and/or consultants, then so state. Where appropriate, completed design studies should be submitted to LANL for consideration in FRD updates, which may require that LANL coordinate formal external reviews by the Principal Investigators (PIs) and DOE. The DRD must be produced and updated in response to the FRD and its updates, not as a direct result of one or more design studies. Design studies will be performed within the context of the DRD, as necessary to finalize individual Design Specifications.

11. Ref: Section 2.2; the purpose of preparing a summary report based on the issues identified in the third-level headings is unclear. The whole point of this effort must be to translate LANL FRD requirements into a DRD that is sufficiently detailed to guide the development of Design Specifications for specific deliverable component packages. The DRD will be routinely updated over the life of the project in response to FRD updates. The point of this discussion should be on identifying (based on review of the current FRD, the mission of the ESF, the integrated construction and testing schedule, and other current information) if any design studies are required to support LANL, so that the FRD can be updated in areas related to the FY 94 system deliverables. In any case, the DRD must be developed based on the current version of the FRD, and critical Design Specifications should be prepared to support the procurement and testing of the FY 94 system deliverables. If LANL wishes the M&O/Fluor Daniel to assist them through the performance of specific design studies, then they should be identified in the EPO as planned deliverables, with appropriate milestone dates established for their submittal.

12. Ref: Section 2.4; multiple procurement documents supporting specific packages of system deliverables will be required, not a single specification as implied in this Section.

13. Ref: Section 2.5; preliminary and final deliverable dates for the IP should be specified. Again, in order for the IP to be meaningful, the Design Specifications for FY 94 should be completed in order to develop a proper procurement plan.

14. Ref: Section 2.9; in paragraph seven, please note that DOE configuration audits will be required in all cases as the basis for acceptance of each deliverable portion of the IDS into the overall configuration baseline for the ESF.

15. Ref: Sections 3.0 and 3.1; this is the first indication that system modularity requirements and coordination of the delivery of discrete system component packages has been considered. It is suggested that the text be expanded and clarified as part of a discussion of the conceptual design; see General Comment 1.

16. Ref: Section 4.1.1; what is the relationship of these specifications to Fluor Daniel's activities? If they apply because the FRD requires that they be considered by the IDS contractor, then they should be cited; if not, then they should be deleted. Given the potential for misinterpretation and misapplication of requirements documents, the greatest care should be exercised in the identification of requirements. The EP should contain only those requirements that do in fact apply to the scope of IDS development and to the specific IDS-related responsibilities of the M&O and Fluor Daniel.

17. Ref: Section 4.1.2; the EP should describe how the references cited here will actually be implemented by the IDS contractor. In other words, the plan should reference the specific management systems, plans, and procedures that will actually be used.

18. Ref: Section 4.3; have the applicability of the DOE Orders cited in this and other Sections (e.g., 5300.1, 1360.1A) to the YMP actually been confirmed by YMPO and OCRWM? The potential impact of these documents is significant to the overall planning structure and cost requirements of the project; if no specific requirements for their use exists, then all such references should be purged from the document.

19. Ref: Section 4.4; has FIPS publication compliance been confirmed by YMPO as mandatory for the IDS? see comments 16 and 18.

20. Ref: Section 4.5 DOE/RW-0214, ASME NQA-1 (note that the ANSI qualifier was dropped in 1989), and portions of NUREG 0856 (as defined by Section 19 of DOE/RW-0214) are definitely applicable to the IDS. Applicability of the remaining standards must be determined prior to the issue of this document; see comments 16 and 18.

21. Ref: Sections 4.6 and 4.7; see comments 16 and 18; applicability must be confirmed prior to incorporating their provisions into the EP.

22. Ref: Section 4.8; it is understood that Fluor Daniel has committed to adopting the M&O's QAPP, without modification. If this is indeed the case, then the M&O's role in the training and qualification of Fluor Daniel personnel and their larger role in the management of Fluor's subcontract must be explained in greater detail. It is unlikely that Fluor Daniel will be able to fulfill their DIS mission without having to initiate some modifications or exceptions to the M&O QAPP. How, for instance, will design interface requirements between LANL and Fluor Daniel be managed within the context of the M&O's QAPP? How does the design/interface management process defined in the M&O's QAPP address the needs of the IDS, given the nature of the responsibilities shared by REECo, Fluor Daniel, and LANL? It is strongly suggested that the M&O's QAPP be carefully reviewed against the actual needs of the IDS, as currently scoped; areas of potential conflict should be identified, and QAPP modifications or special case alternatives should be developed in order to ensure that the management system represented by the QAPP actually supports the needs of the IDS. Failure to pick up such a modification requirement could precipitate a planning gap that could raise doubts about the adequacy of the design process and even the integrity and defensibility of the data acquired through the installed system.

23. Ref: Section 4.9; the M&O QAPP requirements for software verification and validation will take precedence over the references cited in Section 4.9; see comment 22.

24. Ref: Section 4.10; the YMP Configuration Management Plan applies to completed ESF components/YMP configuration items, and does not directly apply to the design or development phases of such items prior to their completion. Configuration management concerns must also apply during the development phase if the phased delivery concept is going to work. Configuration changes to delivered portions of the system will affect the design and development of future deliverable system packages; conversely, configuration changes during development or testing of modules may engender changes that must be picked up in the delivered configuration. In other words, the configuration management system employed by the IDS contractor must be capable of controlled interaction with the YMP ESF configuration management system throughout the life of the project.

Note that the configuration management procedures provided by the M&O only address software; all elements of the IDS (hardware, software, and documentation) must be addressed as part of the system configuration. It is recommended that the IDS contractor produce a configuration management plan as an appendix to the QAPP or DRD as one of its first deliverables, and support it with M&O procedures if they are available and appropriate, or develop new supporting procedures as appropriate for the needs of the system.

25: Ref: Sections 4.11, 4.12, 4.13, and 4.14; the applicability of DOE Order 1360.2A to the ESF IDS should be confirmed early in the planning process; see comments 16 and 18.

Cy: N Elkins, LANL, EES-13/LV, MS 527
H Kalia, LANL, EES-13/LV, MS 527
J Canepa, LANL, EES-13, MS J521
EES-13/LV, LANL, MS 527
CAG Files, Carlton, OR

Organizational Responsibilities And Interfaces, By Activity

The following sections describe overall organizational responsibilities for IDS design, procurement, assembly, testing, installation, and operation, by sequential activities. Table 1 presents these responsibilities in a simplified matrix; Figures 1 and 2 describes the same general sequence of activities in flow chart format.

1.0 Prepare/Update Test/IDS schedule

1.1 LANL - develops test and IDS schedules, provides planning input to M&O integrated planing

1.2 REECo - provides input at LANL request

1.3 YMPO
- initiates schedule changes where desired and where necessary to support changes in ESF mission, construction/testing schedule or sequence

1.4 Participants
- initiates schedule changes where necessary to support changes in ESF mission, construction/testing schedule or sequence
- provides input at LANL request
- reviews all schedule changes

2.0 Prepare/Update Functional Requirements Document (FRD)

2.1 LANL
- develops FRD, manages controlled distribution per LANL QAP
- reviews all FRD change requests from participants, M&O-IDS, participants, and YMPO
- processes all revisions to FRD, based on approved change requests

2.2 M&O-IDS
- provides input at LANL request
- initiates FRD change requests where necessary to support IDS design development

2.3 YMPO
- initiates FRD change requests where desired and where necessary to support changes in ESF mission, construction/testing schedule or sequence

2.4 Participants
- initiates test requirement change requests where necessary to support changes in ESF mission, construction/testing schedule or sequence, or test conditions
- reviews and comments on FRD

3.0 Direct M&O-IDS to proceed

3.1 LANL
- identifies tests that are part of current test planning activities and schedules
- directs the M&O to proceed with design/procurement and implementation of IDS to

support identified tests

3.2 M&O-IDS
- provides input at LANL request
- reviews and comments on capability of M&O-IDS to meet the direction

4.0 Prepare/Update Engineering Plan

4.1 M&O-IDS
- prepares Engineering Plan (EP) defining overall M&O-IDS responsibilities for entire IDS effort; interfaces with YMPO, LANL, and other organizations; planning structure; master schedule; specific deliverables (planning documents and deliverable portions of the IDS) by fiscal year (FY) and IDS implementation phase; and overall manpower requirements and budgetary ceilings for at least the next FY with estimates for out-years
- manages controlled distribution of EP per M&O-IDS Quality Assurance Plan (QAP)

4.2 LANL - reviews and comments on EP

4.3 YMPO - reviews and approves EP and all subsequent revisions

5.0 Establish/Maintain IDS Configuration Management System (CMS)

5.1 M&O-IDS
- establishes configuration baseline for IDS, manages all configuration changes per M&O-IDS QAP requirements

5.2 LANL
- reviews and approves configuration management plan/procedures, all subsequent updates

5.3 YMPO
- reviews and approves M&O-IDS's QAP/configuration management plan/procedures, all subsequent updates

6.0 Prepare/Update IDS Operations and Maintenance (O&M) Plan

6.1 M&O-IDS
- Prepare a definition document describing O&M requirements and activities by fiscal year (FY), IDS implementation phase, and ESF construction phase

6.2 LANL - reviews and comments on O&M Plan

6.3 YMPO - reviews and approves O&M Plan and all subsequent revisions

6.4 REECo
- prepares O&M Plan defining overall O&M responsibilities for entire ESF effort; interfaces with YMPO, M&O-IDS, LANL, and other organizations; planning structure; master schedule; specific deliverables by fiscal year (FY) and IDS implementation phase; and overall manpower requirements and budgetary ceilings for at least the next FY with estimates for out-years
- manages controlled distribution of O&M Plan per REECo Quality Assurance Plan (QAP)

6.5 Participants
- provide input at REECo request
- reviews and comments on O&M Plan

7.0 Prepare/Update Design Requirements Document (DRD)/Design Specifications

7.1 M&O-IDS - prepares/updates Design Requirements Document (DRD) to implement LANL FRD requirements, define design interfaces with LANL and other organizations, and control internal design effort
- prepares Design Specifications for IDS hardware/software components, prioritized to support schedules for specific deliverable portions of the IDS
- conducts design studies as required to complete individual Design Specifications
- updates DRD, Design Specifications, and conducts additional design studies as necessary to address revisions to FRD
- manages controlled distribution of DRD, Design Specifications, and design studies per M&O-IDS QAP requirements

7.2 LANL
- reviews and approves DRD, Design Specifications, design studies, and all subsequent updates

7.3 YMPO - reviews and approves DRD, Design Specifications, and all subsequent updates

7.4 Participants
- provides input at M&O-IDS request
- reviews and comments on DRD

8.0 Prepare/Update Implementation Plan

8.1 M&O-IDS
- develops Implementation Plan (IP) and updates as necessary to address revisions to FRD
- manages controlled distribution of IP

8.2 LANL
- reviews and comments on design and schedule portions of IP and all subsequent revisions

8.3 REECo - reviews and comments on procurement portions of IP

8.4 YMPO - reviews and approves IP and all subsequent revisions

9.0 Prepare procurement specifications

9.1 M&O-IDS
- develops IDS component and system hardware and software procurement specifications

9.2 LANL - reviews and comments on procurement specifications

9.3 REECo - provide input at M&O-IDS request

10.0 Procure System Components

10.1 REECo
- reviews and comments on procurement portions of IP
- coordinates vendor evaluation, RFP preparation, bid response evaluation, and vendor selection processes per REECo QAPP requirements and memoranda of understanding with YMPO, LANL, and the M&O-IDS
- procures system components as required by individual Design Specification, prioritized to meet the schedule defined by the EP/IP
- monitors vendors' technical, cost and schedule performance; leads external QA audits of vendors as required by REECo QAPP or by LANL, M&O-IDS, or YMPO request
- coordinates acceptance testing in vendor's facilities, as required by individual Design Specifications
- negotiates all vendor corrective action required by receiving inspection Non Conformance Reports (NCRs) generated by REECo and post-receiving NCRs generated by others
- provides warehousing/material control services for accepted items and equipment pending M&O-IDS needs for assembly and testing

10.2 LANL

- participates in vendor evaluation, RFP preparation, bid response evaluation, and vendor selection processes to the extent defined in approved EP and IP documents
- at their discretion, witnesses factory acceptance tests (FATs) and participate in QA audits/surveillances of vendors' facilities

10.3 M&O-IDS
- proposes vendor list, participates in vendor evaluation, RFP preparation, bid response evaluation, and vendor selection processes to the extent defined in approved EP and IP
- reviews and approves FAT plans and witnesses, reviews, and approves results of FATs conducted in vendors' facilities
- participates in disposition of all receiving inspection nonconformance reports (NCRs) originated by REECo, other post-receival NCRs

10.4 YMPO

- reviews and approves proposed vendors, all major procurement packages to the extent defined in the approved IP

- at their discretion, witnesses FATs or participates in QA audits in vendors' facilities

11.0 Assemble Deliverable Portions of IDS

11.1 M&O-IDS
- draws items and equipment from REECo warehousing/material control, assembles deliverable portions of IDS

11.2 LANL - witnesses assembly, at their discretion

11.3 YMPO - witnesses assembly, conducts QA audits or surveillances, at their discretion

12.0 Conduct Acceptance Tests

12.1 M&O-IDS
- prepares acceptance test plans (ATPs), conducts acceptance tests of deliverable portions of IDS
- resolves all nonconformances with LANL

12.2 LANL
- reviews and approves ATPs, witnesses acceptance test of deliverable portions of IDS, reviews and approves test reports

12.3 REECo
- assists M&O-IDS in resolution of any NCRs for which REECo or vendor is responsible

13.0 Conduct YMP Configuration Audit

13.1 M&O-IDS

- hosts YMPO configuration audits of deliverable portions of IDS after successful completion of M&O-IDS acceptance tests
- resolves all nonconformances with YMPO

13.2 YMPO
- conducts configuration audits of deliverable portions of IDS after successful completion of M&O-IDS acceptance tests

13.3 LANL
- witnesses YMPO configuration audit
- assists in resolution of nonconformances

13.4 REECo
- assists M&O-IDS in resolution of any nonconformances for which REECo or vendor is responsible

14.0 Store/Install Accepted Portions of IDS

14.1 REECo
- provides warehousing/material control services for system deliverables after successful completion of YMPO configuration audit, and/or transports to ESF for installation
- installs deliverable portions of IDS under M&O-IDS, LANL direction

14.2 M&O-IDS - supervises installation of system deliverables

14.3 LANL - monitors installation of system deliverables

14.4 YMPO - witnesses installation of system deliverables, at their discretion

15.0 Conduct Operational Acceptance Tests (OATs)

15.1 M&O-IDS
- prepares Operational Acceptance Test (OAT) plans, conducts OATs
- resolves any nonconformances with LANL and YMPO

15.2 LANL
- reviews and approves OAT plans, witnesses OATs, reviews and approves OAT reports

15.3 YMPO
- reviews and approves OAT plans, witnesses OATs, reviews and approves OAT reports

15.4 REECo
- assists M&O-IDS in resolution of any NCRs for which REECo or vendor is responsible

16.0 Operate System

16.1 M&O-IDS - provides training to O&M operators and monitors system performance

16.2 LANL - witnesses operation of tested and accepted system and monitors system performance

16.3 YMPO
- witnesses system operation or conducts QA audits or surveillances, at their discretion

16.4 Participants
- witnesses operation of tested and accepted system and monitors system performance

Table 1 IDS Organizational Responsibility Matrix
Relating Design, Procurement, Assembly, Test, Installation, and Operation activities

ACTIVITY	ORGANIZATIONAL RESPONSIBILITY					
	M&O-IDS	LANL	YMPO	REECo	O&M	Participants
1. Prepare Test/IDS schedule	--	P	I	I	--	I/A
2. Prepare/update Functional Requirements Document (FRD)	I	P	I	--	--	I/A/R
3. Direct M&O-IDS to proceed	I/R	I	P/E	--	--	--
4. Prepare/Update Engineering Plan (EP)	P	R	A	--	--	--
5. Establish Configuration Management System (CMS)	P/E	A	--	--	--	--
6. Prepare/Update Operations and Maintenance(O&M) Plan	I/R/A	I/R	I/A	--	P/E	I/R
7. Prepare/update Design Requirements Document (DRD), Design Specifications & Design Studies	P	R/A	A	--	--	R
8. Prepare/update Implementation Plan (IP)	P	R	A	I/R	I	--
9. Prepare procurement specifications	P	I/R	--	I	--	--
10. Procure IDS components	I/W/A	I/W	A/W	P/E	--	--
11. Assemble deliverable portions of IDS	E	W	W	--	E/W	--
12. Conduct acceptance tests	E	W/A	W	I	E	--
13. Conduct configuration audit	I	W/I	E	I	I	--
14. Store/install system deliverables	W/A	W	W	E	W	--
15. Conduct OATs	E	W/A	W/A	I	W	--
16. Operate system	I/W	I/W	W	--	E	W/I

Table 1 Abbreviation and Acronym Key

A	approves
E	executes
I	(provides) input
P	prepares
R	reviews and comments
W	witnesses
--	no action
YMPO	US Department of Energy, Yucca Mountain Project Office - YMPO

LANL	Los Alamos National Laboratory
M&O-IDS	Management & Operation Contractor IDS Design Team
REECo	Reynolds Electric and Engineering Company
O&M	REECo IDS Operations and Maintenance Group

LOS ALAMOS NATIONAL LABORATORY

Tracers, Fluids, and Materials Management System v1.0

Breif Tutorial

Computer Applications Group, Inc.

Introduction.

The TFM Management System is a relational database application written for Boreland Paradox v4.0 in the Paradox Application Language (PAL). The TFM Management System is designed to track tracers, fluids, and materials used on the Yucca Mountain Project site. This tutorial assumes the application has been properly installed on the user's computer.

Technical support.

Computer Applications Group, Inc. provides technical assistance to users of this application. Call Gillian Hall at 602-839-3557 or FAX 602-839-3668 with questions or problems.

How to begin.

1. Open Paradox 4.0.
2. Select Scripts.
3. Select Play.
4. Select the script selection screen.
5. The script name "Tfm" should appear in the script selection screen.
6. Select OK.
7. The TFM Management System application should launch.

Keys to remember.

F1	Lookup help.
F2	Select/save.
F10	Main menu.
Esc	Go back (through windows or menus).
Ctrl-U	Undo/cancel.

The main menu.

The TFM Management System allows users to enter information about TFMs, Locations, Documents (like JPs, TPPs, and TFM A/URs), Persons, and Organizations. In addition, the system provides reporting, user level, and printer setup features.

TFMs — Information about TFMs is captured on the TFM Data Entry Form.

1. Select TFMs from the main menu.
2. Select TFM from the submenu.
3. You are given a choice of editing/reviewing an existing TFM or of adding a new one.

4. TO ADD a new TFM, select New TFM. Then complete the TFM Data Entry Form.
5. TO EDIT/REVIEW an existing TFM, select Existing TFM. Then select the desired TFM from the TFM Selection Form with the mouse or the F2 key.
6. The only required field on the TFM Data Entry Form is Name.
7. Some fields like Category and MSDS Info have "lookup help" associated with them. Lookup help is accessed by pressing F1 while in the applicable field. Users will be allowed only to enter "legal" values in these fields, so lookup help can be a time saver.

Materials Data Safety Sheets (MSDSs), Aliases (alternate names by which certain TFMs are known), Categories (generalized group names within which certain TFMs are classified),

2. Select Scripts.
3. Select Play.
4. Select the script selection screen.
5. The script name "Tfm" should appear in the script selection screen.
6. Select OK.
7. The TFM Management System application should launch.