LA-12905-SR
Status Report

UC-810
Issued: May 1995

Los Alamos National Laboratory Yucca Mountain Site Characterization Project 1993 Quality Program Status Report

Stephen L. Boliver

Los Alamos
NATIONAL LABORATORY
Los Alamos, New Mexico 87545

DISCLAIMER

TABLE OF CONTENTS

Abstract 1

1.0 Introduction 2

1.1 Organization 2

2.0 Program Activities 5

2.1 Program Development 5
2.1.1 Issues 6
2.1.2 Goals for 1993 7
2.1.3 Goals for 1994 7

2.2 Procedure Revisions 8
2.2.1 Issues 8
2.2.2 Goals for 1993 11
2.2.3 Goals for 1994 12

2.3 Measuring and Test Equipment (M&TE) 12
2.3.1 Issues 12
2.3.2 Goals for 1993 12
2.3.3 Goal for 1994 12

2.4 Training 12
2.4.1 Issues 13
2.4.2 Goals for 1993 15
2.4.3 Goals for 1994 15

2.5 Software 15
2.5.1 Issues 15
2.5.2 Goals for 1993 16
2.5.3 Goals for 1994 16

2.6 Records 16
2.6.1 Issues 17
2.6.2 Goals for 1993 19
2.6.3 Goals for 1994 20

2.7 Controlled Documents 20
2.7.1 Issues 20
2.7.2 Goal for 1993 20
2.7.3 Goal for 1994 20

2.8 Travel, Presentations and Publications 20
2.8.1 Goal for 1993 21
2.8.2 Goals for 1994 21

2.9 Internal Audits and Surveys 21
2.9.1 Issues 24
2.9.2 Goals for 1993 24
2.9.3 Goals for 1994 25

2.10 Deficiency Reporting System 25
2.10.1 Issues 25
2.10.2 Goals for 1993 25
2.10.3 Goals for 1994 25

2.11 Efforts to Increase Awareness of the Quality Program 28
2.11.1 Issues 28
2.11.2 Goals for 1993 28
2.11.3 Goals for 1994 28

3.0 Trend Analysis 29

3.1 Introduction 29

3.2 Methodology 29

3.3 Internal Audits and Surveys 29

3.4 Internal Deficiencies 31

3.5 Stop Work Orders and Conflict Resolutions 31

3.6 DOE Audits, Surveillances, and Issued Deficiencies 31

3.7 Status of Adverse Trend and Significant Conditions Adverse to Quality 31

3.8 Participant Comparisons 34

3.9 Group Trends 35

3.10 Possible Adverse Trends Associated with Criteria or Procedures 40

3.11 Trends Identified with Probable Cause Determination 40

4.0 Summary 47

5.0 References 47

Acknowledgments 48

Appendix A Q Team Charter 49
Appendix B Training Classes Provided in 1993 51
Appendix C Software Management Status Report 53
Appendix D Controlled Documents Issued in 1993 95
Appendix E Los Alamos Deficiency Database 98

LOS ALAMOS NATIONAL LABORATORY
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT
1993 QUALITY PROGRAM STATUS REPORT
by

Stephen L. Bolivar

ABSTRACT

This status report summarizes the activities and accomplishments of the Los Alamos Yucca Mountain Site Characterization Project's quality assurance program for calendar year 1993. The report includes major sections on Program Activities and Trend Analysis.

Program Activities are discussed periodically at quality meetings. The most consuming issue addressed in 1993 has been the revision of all quality administrative procedures and selected training classes to better meet the requirements of the revised Quality Assurance Requirements and Description document. The preexisting quality assurance program consisted of a sixty page quality assurance program plan, a six hour orientation class, thirty seven quality administrative procedures, a software quality assurance plan and six associated procedures, and a one hour auditor class. By December, 1993, the program was revised to include thirty quality administrative procedures, a four hour orientation class, a two hour records management class, a one hour auditor class, and a requirements traceability network matrix (which is used to show where procedures meet requirements). The new program resulted in a more streamlined training program, simplified forms in procedures, and more efficient record management, software quality assurance, publication, and measuring and test equipment work processes. Other accomplishments include the incorporation of an electronic training database to replace a paper intensive process and a new records management class. The procedure revisions taxed staff capabilities, in that over 5200 individual comments were addressed in the review of procedures. Personnel submitted 815 records to the DOE with only a very low, respectable 0.5% rejection. Lastly, the software program now has 128 programs approved for work subject to quality program requirements.

The Project Office personnel conducted one audit and two surveys of Los Alamos activities. Los Alamos verification personnel conducted twelve audits and six surveys. Seven DOE corrective action reports were closed. This is the first time since 1987 that there were no open corrective action reports at the end of the year. Internally, seventeen deficiencies were recognized. This continues a favorable trend of decreasing deficiencies since 1990. Audited individuals were knowledgeable and responsive to quality assurance requirements.

Trend reports for 1993 were examined and are summarized herein. One open adverse trend will be closed when the affected software procedures are revised. When the number of corrective action reports issued by the DOE were considered, a decreasing trend in the number of reports issued to Los Alamos is indicated. In fact, Los Alamos personnel have continually reduced the number of corrective action reports issued to them by DOE annually for the last four years.

1.0 INTRODUCTION

This status report is for calendar year 1993. It summarizes the annual activities and accomplishments of the Los Alamos National Laboratory (Los Alamos) Yucca Mountain Site Characterization Project (YMP or Project) quality assurance program (hereafter referred to as the quality program). By identifying the accomplishments of the quality program, we establish a baseline that will assist in decision making, improve administrative controls and predictability, and allow us to annually identify long term trends and to evaluate improvements. This is the third annual status report (Bolivar, 1992; Bolivar, 1994).

Quality issues are discussed at Q meetings. Since many personnel are now more knowledgeable about the YMP and quality issues than they were in 1991, and since many of the major issues have been addressed, we were able to reduce our meeting frequency from bimonthly to about once every quarter. These meetings are supplemented by smaller special process team meetings which are held as needed.

Attendance at Q meetings is mandatory for the contributors of this report. These individuals constitute the Q team. At the beginning of each meeting, members summarize their accomplishments since the last meeting and identify any issues to be addressed. Any YMP personnel may bring any quality issue before the meeting for discussion. Discussions are resolved at the Q meeting or limited to one hour discussion per issue. If unresolved, the issue is assigned to a special process team. These teams are comprised of a smaller number of individuals who have expertise on the subject matter or who are impacted by the issue. The Q team discussions and consequent guidance, decisions, or philosophies are documented herein.

This report is divided into two primary sections: Program Activities and Trend Analysis. Under Program Activities, programmatic issues occurring in 1993 are discussed. The goals for 1993 (Bolivar, 1994) are also listed, followed by a discussion of their status. Lastly, goals for 1994 are identified. The Trend Analysis section is a summary of 1993 quarterly trend reports and provides a good overview of the quality assurance issues of the Los Alamos YMP.

1.1 Organization. Training, records, and document control activities do not administratively fall under the auspices of the Quality Assurance Project Leader (QAPL). They are discussed herein because these activities are an integral part of the overall quality program, representatives from these activities attend quality meetings, and the QAPL and Administration and Control Project Leader work closely to ensure the needs of the Los Alamos YMP are met. A discussion of the Los Alamos YMP organization is thus included to clarify the responsibilities of these entities.

The Los Alamos YMP quality program consists of four organizations, which are managed by a Deputy Technical Project Officer (TPO) and three Project Leaders: the Test Coordination Office, with Ned Elkins (Deputy TPO) as head; Site and Regulatory Investigations led by Janet Mercer-Smith; Administration and Control, headed by Allyn Pratt (ACPL); and Quality Assurance, led by Stephen Bolivar. These staff report to the TPO Julie Canepa.

Personnel changes include the addition of Janet Mercer-Smith as the Site and Regulatory Investigations Project Leader (effective November, 1993). In April, Mike Clevenger became Deputy Quality Assurance Project Leader. This position was formerly filled by Paul Gillespie, who took over coordination of the Requirements Traceability Network database. John Day became DOE Liaison, which is a new function. This position should foster better communication with DOE.

Interactions between technical groups and the quality organization are normally handled by Quality Assurance Liaisons (QALs). Audit, survey and verification functions are administered by a Verification Coordinator, whereas a Software Coordinator handles configuration control of the software program. These positions report to the Quality Assurance Project Leader (Fig. 1).

QAL responsibilities are identified in Table I. During the year, one QAL retired and one left the YMP. Lyle Wichman was hired as a new QAL. The EES-13 QAL duties were assumed by the Deputy QAPL, Mike Clevenger. Because we were able to consolidate duties among existing QALs, manpower needs were reduced by about 0.5 staff. In the last two years QAL manpower needs were reduced by about 1.5 people, even though the scope of work has slightly increased.

Table I. Quality Assurance Liaison (QAL) Responsibilities.

Person	Responsibilities
Andrew Burningham	Group EES-13/TCO; Group EES-13/LV Volcanism; Subcontractors University of New Mexico; Ohio State University; University of California (Riverside); Golder Associates
Mike Clevenger	Group EES-13; Deficiency Report Coordinator; Deputy QAPL
Richard Shay	INC Division; EES-5; Subcontractors HydroGeoChem; Lawrence Berkeley Laboratory; Stanford University; M&TE Coordinator.
Lyle Wichman	Groups EES-1, EES-4, EES-15 and LS-2; assists M&TE Coordinator.

Training, Records, and Document Control Coordinators report to the Administration and Control Project Leader (ACPL). So do Resident File Custodians (RFC) who maintain the resident files where quality records are stored. Because the YMP requires dual storage of quality records, the Records Coordinator maintains a Records Processing Center (RPC) where the second set of records is kept. The relationship between the ACPL and these groups is depicted in Figure 1.

In 1993, 142 people were involved in the Los Alamos YMP, although not all are full time equivalents. Of these 142, 110 are involved in quality activities, i.e. activities governed by the Quality Assurance Requirements and Description document. Table II shows the Los Alamos YMP personnel categorized by Laboratory group for 1993.

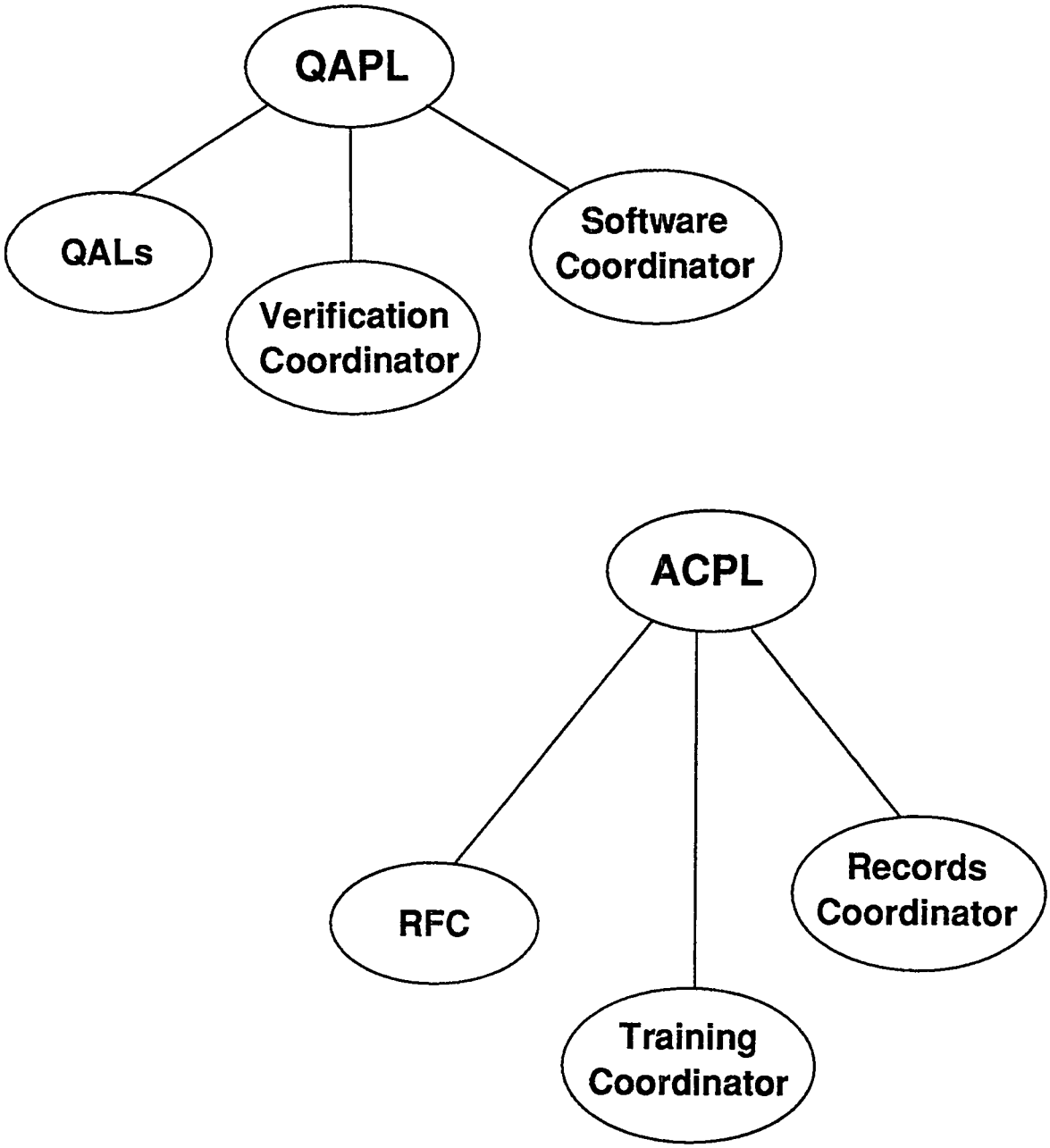

Fig. 1. Organizational Reporting Responsibilities (acronyms described in text).

Table II. Laboratory Groups and YMP Personnel.

Groups	Q Activity	Non-Q Activity
Earth and Environmental Sciences (EES) Division (except for program management)	28	5
Program Management	23	11
Isotope and Nuclear Chemistry (INC) Division	22	4
Other Divisions	4	3
Contractors	31	9
Totals	110	32

2.0 PROGRAM ACTIVITIES

2.1 Program Development. Most program development activities are initiated and discussed in Q meetings. Action items are assigned to individuals, and their status is tracked via an action item database. This database is used to ensure that items are resolved. Action items may cover simple tasks, such as making a phone call, to more involved tasks such as revising a procedure. The status of open items is discussed at each Q meeting. In 1993, 236 action items were addressed.

We are still trying to determine the best frequency for meetings. In 1991, about twenty-five meetings were held. In 1992, the frequency was reduced to about one per month. In 1993, we met about five times. These quarterly meetings are supplemented by smaller special process team meetings. For example, the QALs and QAPL met about once per month. The frequency of one Q meeting per quarter, where major issues are discussed, supplemented by smaller special process team meetings as needed, appears to be an optimum frequency for the Q team.

During the first Q meeting of 1993, a self assessment of the 1992 Q team was conducted. Brainstorming techniques were used to identify major issues in the Los Alamos YMP that the Q team addressed in 1992. These problems were then ranked and the top three identified. The Q team also examined the action item database and identified the top accomplishments. Lastly, goals for 1993 were identified. The results are shown in Table III.

In 1991, the top three issues were: a) lack of accountability for deadlines; b) excessive problems with records; and c) management not involved in Q meetings. We determined that we generally resolved these issues in 1992, but because the goals were not quantitative, it was difficult to determine how successful we were. Consequently, we determined we would quantify our 1993 goals so they could be measured. These are listed in Table III. A Q meeting charter was also developed (Appendix A).

Our Los Alamos program office is establishing a computer network. Much of the infrastructure (such as wiring) was installed in 1993. There were also extensive group discussions concerning the potential uses of such a system. This system should become available in early 1994.

Table III. Self-Assessment of the 1993 Q Team.

Issue Identification (Top 3 Issues- what we spent most of our time on)	1. Monitoring the revision of procedures 2. Assessing and updating the training process 3. Monitoring the verifications of deficiencies
Accomplishments	1. Communication of YMP business 2. Team building atmosphere
Goals for 1993	1. Reduce open internal deficiencies to less than 10 by 12/31/94 2. Develop a Q team network by 12/31/94 so members could communicate 3. Decrease our internal records rejection to 5% 4. Implement the QARD by 7/31/94 5. Revise all QPs by 7/31 6. Hold four Q meeting in 1994 7. Identify metrics for problems we address 8. Hold smaller meetings as necessary

The Laboratory is experiencing a culture change. Part of this change is an awareness of Continuous Quality Improvement (CQI). The Q team does discuss and try to implement CQI as a normal way of business. This topic is discussed at almost every Q meeting and drives many of our activities.

2.1.1 Issues.

The option of using a controlled forms book was again discussed. Currently, the Document Control Coordinator sends forms to selected personnel, usually QALs. We decided not to issue a controlled forms book because most QALs felt this was an administrative task and implementation should be left up to individual groups. It was also decided not to allow people to use the forms directly out of a procedure, because the owner might not have adequate control over the forms. Because each group handles forms differently, and there are no major problems currently, the process will remain as is.

The Q team also examined the process for identifying new and departed employees. At times it has been difficult identifying personnel who work on the YMP. In general, it is the responsibility of the QALs to identify when people join or leave the YMP. This notification is done at the quarterly Q meetings. Thus, changes to distribution lists, the organization chart, and training files documentation are initiated at this time. The QALs agreed to ensure the organization chart titles and position description titles were consistent. We also agreed to place an informal note in personnel files when personnel left. This would allow us to better identify when personnel were active. One QAL was selected to contact departed employees and ask them to fill out a Quality Concerns questionnaire.

In an effort at continuous improvement, Mike Clevenger agreed to take the organization chart and update it so that it would be a better visual aid (the current chart is forty pages thick and difficult

to use). He was able to reduce the chart to thirteen pages, with major organizations depicted on a single page. The QALs also worked out a process to ensure that position descriptions followed TPO policy and organization titles matched. This information was incorporated into QP-01.4.

Two forms of electronic media affected discussions at several of our Q meetings. One was the development and testing of an electronic version of the training database. This is discussed further under Section 2.4, Training. The other was discussion of the philosophy for an electronic network so that various members of the team would be able to better communicate. Change to an electronic network is favored by the QAPL but has not yet garnered a lot of Q team support. This will be an important issue in 1994.

One Q meeting was held in Las Vegas. DOE management feels it is important for YMP members to see firsthand the Las Vegas operations, and to actually visit Yucca Mountain. Almost all members of the Q team visited the Field Operations Center, the Sample Management Facility, and North Portal of Yucca Mountain. The Q team also attended Conflict Resolution and Root Cause Determination classes, toured the local records center, were oriented to the Test Coordination Office, and critique a pilot class for our QP-17.6. These activities greatly contributed to a better understanding of the YMP, as well as creating better relations between various organizations.

Several miscellaneous items were also discussed. These included developing a method to help investigators obtain faster (and higher quality) copies of notebooks, composing a standard exemption phrase for those investigators who did not want to turn their old notebooks into records as required in a recent revision of procedure QP-03.5, developing guidelines for QALs to submit monthly reports to the QAPL, and QALs agreeing to visit subcontractors once per quarter. Other items are discussed under the appropriate subheadings.

2.1.2 Goals for 1993.

- Write a procedure that allows for exemption to administrative procedures.
- Hold quarterly Q meetings in 1993.
- Better define the mission of the Q team.
- Discuss the possibility of forming a QA steering committee.
- Produce a relational database for distribution lists.

A procedure allowing exemption to quality administrative procedures was developed and issued. Five Q meetings were held, and the mission of the Q team was identified in a charter (Appendix A). Although a steering committee was not formed, the Q team was organized such that subteams or smaller process teams could be selected when issues became too complex for the Q team to handle. This approach worked very well. A relational database was not developed because it depends on having a functional network. This will be deferred to 1994. In all, 80% of goals were met or exceeded.

2.1.3 Goals for 1994.

- Develop a working network such that Q team members can communicate.
- Produce a relational database for distribution lists.
- QALs to visit subcontractors at least once per quarter.

2.2 Procedure Revisions. The Los Alamos quality program uses two types of implementing procedures: quality administrative procedures (QPs) and detailed technical procedures (DPs). Preparation follows formal guidelines as described in QPs-06.2 and -06.3. In addition, QPs are edited and formatted by the EES-13 office.

In January 1993, the DOE required that we implement the new Quality Assurance Requirements and Description (QARD). This document contains all quality related requirements. However, to meet these requirements, we would have to revise every quality administrative procedure (QP).

The Los Alamos quality program at the beginning of 1993 had a sixty page quality assurance program plan, thirty-seven QPs, a six hour orientation class, a software quality assurance plan and six corresponding procedures, a formal auditors class, and eighty-two DPs. Table IV shows the status of procedure revisions for the last three years. To revise all our procedures in 1993 would require a tremendous effort, and we wondered if we had the ability to do it. Fortunately, only the QPs (and not the DPs) would have to be revised to meet the QARD requirements.

Table IV. Procedure Revision Status.

1991	Total	Affected	New	Delete	Redo
QPs	38	25	11	4	10
DPs	84	23	4	2	17

1992	Total	Affected	New	Delete	Redo
QPs	36	27	7	7	13
DPs	82	47	16	18	13

1993	Total	Affected	New	Delete	Redo
QPs	37	47	10	8	29
DPs	90	12	3	2	7

2.2.1 Issues.

The DOE requested that we submit various transition and impact plans identifying how we would implement the QARD. We discussed various approaches at a Q meeting, but because the problem was so complex, we created an implementation team of four people. They examined various strategies. It was suggested that we

- Redo all procedures simultaneously.
- Initiate an electronic version of the training database.

- Simplify the records, measuring and test equipment, software, technical information products, and study plan review processes.
- Update the orientation class and develop a new records management class.
- Release all new procedures simultaneously (rather than one at a time)

The new QARD does not require a separate quality assurance program plan document describing the overall quality program. The Los Alamos YMP quality assurance program plan would be described solely by QPs; in particular, our organizational procedure would describe our quality assurance program and would include an overview of the Los Alamos YMP.

The implementation team presented the plan to the Q team. The Q team had been struggling to improve the procedure revision process and reduce the time required to issue a revised procedure. The YMP quality assurance revision process requires mandatory reviews by affected organizations, and this can be a lengthy process. A process improvement exercise in 1992 resulted in shortening the process for completing minor revisions to a couple of months and major revisions to under five months. Although it would be ambitious to revise all procedures, it certainly seemed possible (Table V).

Table V. Statistics for Revision of Procedures.

Year	Type of Revision	Time (major/minor)	Percent (of total) Revised
1989	4 major/ 0 minor	18 mo	10%
1990	5 major/ 4 minor	18 mo / 11 mo	22%
1991	13 major/ 4 minor	12 mo / 6 mo	42%
1992	16 major/ 5 minor	5 mo / 2 mo	53%
1993	23 major/ 15 minor	8.7 mo / 4.5 mo	100%

We believed the revision of all procedures would provide an opportunity to improve the various processes. We had recently employed a new software coordinator, and thus this would also be a good opportunity to improve the software process. Lastly, the Q team had been discussing the introduction of an electronic database for training and had been laying the groundwork to initiate such a move over the last several months. Because we were required to annually update the orientation class and wanted to introduce a new records management class, these activities could also be integrated. Our biggest concern was, would our personnel be able to handle revising all procedures, develop a couple of classes, and improve several processes all at once? For many people, procedure revisions would be a task done in addition to their normal duties.

We used the concept that procedures should be "stand-alone" as much as possible. Review forms should be available for each procedure, rather than directing the reader to use the form in another QP. This reduces the confusion of having to train to a procedure when one only uses the review forms from that procedure. Second, forms were redesigned to be self explanatory.

The DOE was notified of our transition plan (we initially expected to be finished by August), and

authors were selected. The QAPL felt that the revisions to meet the new QARD would be relatively straightforward and easy. We had expected some personnel departures and had foreseen some hardware and software problems. As a result of our planning, these transitions were made relatively smoothly. However, the magnitude of expected problems as well as several unanticipated problems resulted in stressful times. Part of the turmoil was that everyone was simply trying to complete primary duties in addition to revising procedures.

Some of the problems encountered were

- Review process became more complex than anticipated.
- Formatting and consistency were much larger magnitude than anticipated.
- Electronic connections were difficult to get working.
- Personnel changed projects.
- Some processes were more difficult than initially envisioned.
- Some software and hardware incompatibilities were difficult to solve.
- Unanticipated administrative bottlenecks occurred.

These problems are described at length by Bolivar, 1994. They are briefly described below.

Initially, revised procedures were submitted to a member of the implementation team, who reviewed the initial draft. Some revisions cycled through this step several times. New or complex procedures were formally edited, and the QAPL reviewed all QPs before they were released for formal YMP review.

The YMP quality assurance requirements require procedures to be reviewed by affected organizations. If procedure reviews cause extensive changes to the process, the procedure has to be put into the formal review cycle again. We found one method of accelerating reviews was to provide affected organizations with preliminary copies. Major changes would then be incorporated before a procedure was released for formal review. Another successful method was to hold a comment resolution meeting. Differences of opinion could usually be resolved in a timely manner. Surprisingly, we had over 200 formal YMP reviews and 150 informal reviews. This resulted in over 5200 individual comments. Each comment had to be resolved, and this took longer than anticipated.

As a matter of protocol, the final formatted version of a procedure was completed in the Los Alamos YMP office. Unfortunately, we were using one software program for the text and another for the forms. The forms could only be created by one person on one machine, and at times this created a bottleneck. The software procedures were on yet another system. Many procedures were keyed in more than once because of hardware incompatibilities between the program office and the authors' systems. When we felt we had control of the system, the hard disc crashed. Our solution was to limit word processing to one person. Occasionally the word processor became overloaded, in part due to conflicting priorities (the word processor also had other office duties to complete). Although this did create a bottleneck at times, it did provide consistency. To simplify the process, we committed to placing all text in one word processing system.

We originally expected to find some inconsistencies as we reviewed QPs. However, the magnitude of the changes was truly a headache. For example, if a format change that improved a procedure was agreed upon, procedures that had already been approved would have to be reexamined. This was particularly a problem with references, which would change every time a procedure was revised.

The DOE required that the procedures be entered into the requirements traceability network

(RTN). The RTN will allow one to identify what procedures are affected when a requirement is revised. Unfortunately, we had connection difficulties and were unable to utilize the electronic system until October.

We had been planning to develop a records management class for several months, and the revision of all procedures provided an opportune time to initiate this activity. We had hoped to couple the development of this class with the annual revision of the orientation class. Unfortunately these activities took twice as long as we planned. Both classes were affected by the several iterations that the records procedure went through. Our records procedure in turn was affected by DOE changes in their records procedure and records training plan.

Four procedures were completed before it became obvious they were not needed. This was because as more and more procedures neared completion, several processes became better defined, and we realized that some activities belonged elsewhere. In some cases, we found we did not understand a process very well, and in other cases we realized the process we had been using should be changed. These realizations led to completely rewriting the records management and measuring and test equipment procedures. On a more positive note, we were able to combine ten procedures into six, and delete nine others.

By encountering increased work loads, we were forced to become more efficient. Our first procedure was revised four times before the editor said "enough," and we went with what we had. We realized that the former revision process, which was adequate if we only revised a few procedures a year, could be more efficiently run. For example, one way to speed up reviews was to hold a comment resolution meeting. We were able to get all procedures onto one processing system, and individuals were cross trained to avoid bottlenecks. It became obvious that some processes that we had not anticipated changing had to be modified, the new regulations had impacts that no one could predict, and the revision process had to be iterative and thus took longer than planned. It was necessary in some instances to get clarifications from DOE on interpretation of requirements. By December 23, 1993, all QPs had been revised, and the new classes were prepared.

Procedure revisions were the major business item at Q meetings. The revisions resulted in a more streamlined training program, fewer forms in procedures, and more efficient work processes. Changes included developing an organizational procedure with a YMP overview and policy statement, combining the records system procedures QPs-17.4 and -17.5, combining procurement procedures QP-04.4 and -04.5, and replacing two deficiency reporting procedures with a new Corrective Action Report procedure. A RTN process procedure and a grading procedure (now called exemptions) were developed; the personnel selection, training, and orientation procedures were combined from five into three procedures; TCO procedures were reduced from three to two; the traveler in QP-03.23 was simplified as was the publication process; the software procedures were revised to incorporate the requirements from the software quality assurance plan; and better guidance on how to control supplier manuals and their updates was added to the procedure for measuring and test equipment. This last procedure was also greatly simplified. We started with thirty-seven QPs and now have thirty. There is 22% less paper, and 7% fewer forms. Lastly, since most of our processes have been relatively well defined and majority of procedures formally reviewed by an editor, we were able to eliminate the QP editor position. Procedures still get edited, but it is no longer necessary to maintain a full-time editor to fulfill this need.

2.2.2 Goals for 1993.

- Write an organization procedure.
- Revise all QPs to meet the new QARD requirements.

• Withdraw the quality assurance program plan.

An organization procedure (QP-01.4) was written and the appropriate QPs revised. The quality assurance program plan is now described in the organizational procedure. These goals were 80% realized.

2.2.3 Goals for 1994.

• Look at the QP revision process and determine if it can be made more efficient.
• Revise selected QPs to satisfy any DOE review comments.
• Withdraw the quality assurance program plan.

2.3 Measuring and Test Equipment (M&TE). These activities are administratively handled by an M&TE Coordinator. The M&TE Coordinator notifies individuals when calibrations are due.

2.3.1 Issues.

The M&TE procedure needed revision as the result of new QARD requirements; thus we used this opportunity to completely rewrite the procedure. There was extensive discussion on whether we needed a separate procedure for standards or if it should be combined with the M&TE procedure. We decided to keep just one procedure; however, separate forms are used for standards versus M&TE equipment. This procedure elicited several comments from investigators. As the result of these discussions, the procedure better reflects how the process works.

We formerly required anyone who used equipment to train to the M&TE procedure. However, the procedure is only used by those who do actual calibrations; therefore it was suggested that we limit training only to those who do calibrations. The text was also revised to bring procedures more in line with Laboratory M&TE policies.

2.3.2 Goals for 1993.

• Revise the M&TE procedure (QP-12.1).
• Examine and streamline the M&TE process.

Both of these goals were met for a 100% completion rate; however, the process can still be sreamlined further.

2.3.3 Goal for 1994.

• Examine QP-12.3 and determine if the process can be further simplified.

2.4 Training. The Los Alamos quality program philosophy is that documented training is only required for individual performing work governed by the QARD. We have always invoked a paper intensive process to track training. During several discussions, members of the Q team realized

that we needed to have a better system, preferably an electronic one. It was also believed that a formal training class on our records procedure could alleviate some of the errors we were having with record package submissions. Although the issuance of the QARD required that we revise our training procedures, it also provided us with an opportunity to change to an electronic tracking system.

At the beginning of 1993, we had formal training for YMP Orientation (six hours), auditors (one hour), and the software development process (eight hours). The general consensus of the Q team was that we should examine the need for formal training classes (Appendix B). Classroom status is shown in Table VI. Survey comments suggested that the software class, although on video, was not very effective. The Orientation class was updated and taught to twenty-three people on February 25, 1993 (LATA, 1994a,b). Over 95% of all comments for the last two years have been positive, although there have been suggestions to shorten the class. Based on the frequency of problems with record packages, which are associated with failure to pay attention to detail problems, there does appear to be a strong need for records training.

We are also gradually transferring from formal classroom training to "read only" training. There is no noticeable correlation between records rejected (discussed under Section 2.6), deficiencies (see Trend Analysis, Section 3.0), and number of classes taught (Table VI).

Our electronic training database was much more difficult to develop and implement than we imagined. Part of this delay was caused by "bells and whistles" we wanted to add, and part was the normal problems encountered when changing from a paper intensive process to an electronic one. This process took almost twice as long as we had envisioned (Environmental Safety Services, 1993).

Table VI. Training Classes.

Year	Classes Held	Attendees
1991	52	247
1992	16	125
1993	3	41

2.4.1 Issues.

During several discussions throughout the year, we addressed how we could make our training program more effective. We determined that only the Orientation class would be mandatory for all YMP employees. We were determined to create a new training class for records. Rather than create separate classes for several procedures, it appears that one class for all of criterion three might be feasible. This class would address a process, rather than be directed to specific procedural requirements. However, based on the workload for 1993, development of this class would have to be delayed until at least 1995. We also discussed the possibility of creating another video which would track the life of a record, but this also would have to be delayed until 1995.

It was decided that a computerized training database would be designed for the Training Coordinator. It would allow for automatic notification of training as procedures are revised. This

would greatly reduce duplication of efforts between the Training Coordinator and QALs. Efforts to design this system began in November, 1992. The efforts continued throughout most of 1993. A program was available for testing at the end of December. Much of the development time was put into making the program relatively easy to use.

All three training procedures were revised in 1993. The issue of proficiency evaluations was discussed at length by the Q team and a special process team. It was determined that proficiency evaluations are not required by the QARD. Since our supervisors actually do a proficiency evaluation every time a training class notice is distributed, we have no need for QP-02.9. Therefore, we decided to combine this QP with QP-02.5 (Selection of Personnel) and QP-02.7 (Personnel Training). When the new training classes were completed, we found that we had reduced our classroom hours from fifteen to seven (this does not include DP training).

The Limited Function process was also slightly modified. A step was added that provided for verification of the Limited Function person's credentials. This process has been used in the past to primarily provide relief to training requirements. The new step simply gives the process more credibility. Lastly, we also decided that training is only required for the applicable sessions in a QP- i.e., rather than train to a QP, one only needs to train to the applicable sections.

The majority of training development went into designing and testing the new records management training class. Our training specialist conducted a survey and met with the QAPL to best determine training objectives. The QAPL was adamant that the training class be activity oriented with a minimum of lecture.

The training specialist conducted a survey. The survey revealed the issues that had to be addressed were

- Most people do not understand the records process.
- It is not clear which records go in the system.
- There is a lack of attention to detail.
- Responsibility for records has to be made clear.
- Define what is/is not a record.
- Where does one go for information.
- Identify the most common mistakes.
- Have consequences for failure to comply.
- Identify quality assurance and non quality assurance records.

The survey also revealed that the most acceptable methods for conveying this information would be "hands-on training". There also was a clear mandate to provide a proficiency test option. Two important issues that had to be addressed in the class activities were antitraining attitudes and unwillingness to accept responsibility. Over a period of several months a class addressing the above issues was developed.

Two pilot classes were held; one in May at the Test Coordination Office (TCO) in Las Vegas, and one in September at Lawrence Berkeley Laboratory (LBL). The TCO class revealed that there were too many handouts. The manual was streamlined and handouts reduced by 60%. The number of activities were also reduced by 50%. For the LBL class, the amount of lecture time still had to be reduced, but the length of activities was satisfactory. The Q team had several discussions about who the customer of the class should be. It was decided the class would be designed for experienced employees, those who had been on the YMP for several months.

2.4.2 Goals for 1993.

- Revise QPs -02.5, -02.7 & -02.9.
- Set up an electronic training database.
- Determine if we need a "Train the Trainers" class.

All three goals were accomplished. After discussion with DOE personnel, the training class became a non issue because at Los Alamos a subject matter expert is always the instructor. A lesson plan would be developed and documented so that no matter who taught the class, the same information would be taught. All goals were exceeded or completed for a 100% completion rate.

2.4.3 Goals for 1994.

- Test the training database and fix all problems.
- Complete the 17.6 class and offer it to all YMP personnel.
- Ensure that the Orientation class reflects any changes in procedures or requirements.
- Decide what, if any, training is needed for 1995.

2.5 Software. Requests to accept or modify software packages are submitted via a software change request form. These are evaluated by a Configuration Control Board (CCB), and after selected documents are produced and reviews conducted, a software package can be accepted. The status of software change requests is shown in Table VII. A software management status report is included as Appendix C. It appears that the majority of affected software has been at least entered into the system.

Richard Morley started the year as Software Management Coordinator. He was replaced by Christ Mechels in April. Bruce Robinson remained as software Configuration Control Board Chairman. A technician assistant position was selected to be phased out after the software procedures were revised, probably by early 1994. In 1993, four CCB meetings were held.

Table VII. Status of Software Change Requests.

Year	Submitted	Approved
1991	131	49
1992	38	66
1993	12	13
Totals	181	128

2.5.1 Issues.

This has been a very busy year for software personnel. In January we inventoried the hardware and software for the variety or computers and workstations used on the YMP. The architecture

was described and flow chartered. This allowed us to identify what we had and to better determine future needs.

At the beginning of 1993, the software program consisted of six QPs with a software quality assurance plan, and an extensive eight hour video training. The new QARD requirements required that we revise all these documents. Because the new QARD greatly reduced the types of software that have to be controlled, it was decided that the software quality assurance plan (formerly an implementing document) could be incorporated into the six software QPs, and thus eliminated. In turn, the six QPs could be reduced into four QPs. We would then supplement these four QPs with a software quality assurance guidebook, which would not contain any requirements, only guidance. We found that our QPs also had to be revised to better reflect how we do work. The former QPs were not always followed to the letter. A stop work order against computational data procedure was also addressed. We also found that the video training was not very effective and eliminated this training requirement. A possible new training process may be considered at some future date, but we do not have enough affected people to justify directing training funds to this area presently.

Our software program is in a state of change. The exact direction will depend on what DOE and the Nuclear Regulatory Commission (NRC) want from us. Although the most recent QARD resulted in a lessening of former software requirements, some feel that the requirements may change again, becoming more strict. Change seems imminent based on the recognition of DOE orders and the fact that only scientific and engineering software (SES) is addressed currently in the QARD. Thus our QP revision tried to maintain a capability to allow for a stricter program should the need arise. However, the current software Management Coordinator is looking for more efficient ways to conduct software engineering and configuration control.

2.5.2 Goals for 1993.

- Revise the SQAP and associated QPs.
- Examine the software training requirements.
- Hire a permanent software configuration control manager.
- Set up a local area network.

All software procedures were revised and the formal training requirements changed to "read only". A permanent Software Management Coordinator was hired in April. The network was started and should be up and working in early 1994. Over 90% of the goals were met.

2.5.3 Goals for 1994.

- Examine the new process and ensure that it functions adequately.
- Determine if formal training is needed for the software QPs.
- Determine if better software engineering and configuration control methodology could be used.
- Set up a local area network.

2.6 Records. Lynn Sanders returned to fill the Records Coordinator position. This position was redefined to allow for more focus more on liaisons between DOE and Los Alamos. In the middle of the year this position again became vacant. The day to day operations were redefined and Sandy Martinez was selected as Records Processing Coordinator. John Day was selected as Project Office Liaison and will focus his efforts on records, training, and quality assurance issues. In August, Alice Thompson, from the TCO, was selected as Deputy Records Processing Coordinator. These

selections simplified the records functions and worked well for the remainder of the year.

In 1992, 971 records were received by the Records Processing Center. Of these, 117 (12%) were rejected internally. After the records were fixed, they were submitted to the Central Records Center in Nevada. Of the 971 submitted, thirty-seven were rejected (3.8%). In 1993 the total number of records submitted was 816, a decrease of 16%. The RPC rejection rate remained about the same. The Q team felt that a proper records management class could help reduce the internal rejection rate. On a very positive note, the DOE 1993 rejection rate was reduced to 0.5%. This is an excellent acceptance level.

The records process was discussed at length at every Q meeting. Gradually, we began to better understand the role of the Resident File Custodian. The end result was that the procedure was revised and the record submittal form greatly simplified. The complexity of both our system and the DOE process surprised everyone. Although we were able to simplify the process, we can still further improve our efficiency.

2.6.1 Issues.

One of the most important issues we faced in 1993 was the possible reduction of funds for record activities. We were able to negotiate with DOE and maintain an acceptable level of support. In Table VIII, the number of submitted records was reduced by 16%. This is a misleading indicator because although the number of submitted records is less, the actual number of pages is more. Thus we have started tracking number of pages submitted.

About 75% of our records come from our project office and the Las Vegas operations (TCO). In 1993, the amount of records from technical groups EES-1 and INC also increased. Unfortunately, internal rejection rates for 1993 and 1992 are similar. Because of this, and because the Q team feels the 12 to 13% rejection rate is too high, the records management formal training class was designed. Although the rejection of records is one of our most visible problems, only about 0.5% of the records sent to the Project Office are rejected. This rejection rates is one of the lowest in the YMP.

The reasons for rejected records are complex and vary from group to group. Issues such as lack of training, changing terminology, inconsistent application of regulations, lack of attention to detail, a complicated record management plan that is not a requirement document in the eyes of quality assurance but is in the eyes of DOE records personnel, and some requirements that are not reasonable nor understood by investigators (such as requiring black ink on all quality documents), all contribute to the problem.

Many investigators are not adequately trained in records terminology, or they expect other personnel (such as resident file custodians) to perform a review of records before they are submitted. The final responsibility for a record rests with the originator, and this concept is not fully understood nor practiced by all investigators. Thus, we committed to "hands on" mandatory training class. The foundation for this class was developed early in 1992 but was put on hold when the Records Coordinator left the Project and budget restrictions limited our training development.

In early 1993, our records personnel felt that Group EES-13 personnel were submitting records with an unacceptable number of errors. Some Q team members even suggested that the resident file custodian position be eliminated because it appeared to be contributing to the problem. A special process team studied the EES-13 submittal process. Records submitted by this group seldom received any review. The team suggested that a dedicated person be assigned to review

Table VIII. Records Statistics for 1992 (top) and 1993 (bottom).

Group	Records Submitted (with % of total)	RPC Reject	YMP Reject
EES-13	628 (64.7%)	69	21
EES-13-LV	214 (22%)	8	3
EES-1	54 (5.6%)	21	6
EES-4	1 (.0001%)	1	0
EES-5	3 (0.3%)	1	2
EES-15	4 (4.1%)	1	0
INC	56 (5.8%)	14	4
LS-2	1 (.001%)	1	0
LBL	10 (1.0%)	1	0
Total	971	117 (12%)	37 (3.8%)

Group	Records Submitted (with % of total)	RPC Reject	YMP Reject
EES-13	451 (%)	32	0
EES-13-LV	167 (%)	1	1
EES-1	68 (%)	27	2
EES-4	6 (%)	0	0
EES-5	2 (%)	0	0
EES-15	10 (%)	8	0
INC	80 (%)	29	1
LS-2	01 (00%)	0	0
LBL	31 (%)	4	0
Total	815	107 (13%)	4 (0.5%)

EES-13 records. As a result, a part time resident file custodian was hired in mid 1993 by EES-13.

This person received on the job training with the Records Operation Coordinator. The records submitted by EES-13 now have fewer errors. The special process team also examined how records

were submitted by other groups. Although some groups had problems submitting records, it did not appear to be the fault of the resident file custodian, but rather the fault of the record originator. The originator failed to follow the QP, or failed to review the package before it was submitted. This would be addressed in the formal records management class. Thus, the Q team decided to retain the resident file custodian position.

The special process team also looked at the issue of putting a unique identifier on every page when a records package was submitted. Although this may be a good idea in some cases, it did not seem reasonable to require this for all record packages. This was a critical issue since our records budget was being reduced, and the DOE QA department does not specifically require such.

Another issue was to see if it was reasonable for originators to submit records directly to Las Vegas. It did not appear reasonable to the Q team to have DOE personnel deal with multiple submittors; rather, by coordinating submittals through the local Los Alamos records center we would ensure consistency and facilitate efficiency.

We also agreed to eliminate the traditional TWS number and replace it by a LA number the next time the records procedure is revised. This would facilitate record searches and simplify the nomenclature. To enhance record retrievals, a new microfilm reader was purchased.

In the beginning of the year the DOE requested we reduce our records budget. As a result, we had to identify several areas that we could cut back on. DOE was given a selection. The bottom line was that as money decreased, the amount of services our records personnel provided also reduced. We are trying to make our process more efficient but the constantly changing records requirements makes this very difficult.

One area that was affected by the reduced budget was that of accession numbers. This became a problem when several (over 50) numbers were requested. The computerized system failed to provide a very fast turnaround and we ended up with a bottleneck. We formed a special process team that redefined the accession number process. These changes were then incorporated into our revised records management procedure. The bottom line is that only final reports (defined as LA-MS reports) will now have accession numbers. Affected investigations were also notified and advised on how they could speed up the process and avoid potential pitfalls. Our Project Office Liaison agreed to bring this issue up with DOE records personnel and determine what requirement is really driving accession numbers.

The revised QP on records management combined two procedures (QP-17.4 and -17.5) into one procedure (QP-17.6). Although this QP is an improvement over the previous records procedures, the records process is very complex and still difficult to follow in part. The current process can probably be improved and will be examined again in 1994.

2.6.2 Goals for 1993.

- Hire a Records Coordinator.
- Examine the records process, and revise the QPs as appropriate.
- Provide a records training class.
- Purchase a new microfilm reader/printer.
- Examine index and tracking system and improve as appropriate.
- Review existing microfilm process.

A Records Coordinator was hired. This position was eventually integrated into that of Records

Operation Coordinator and Project Office Liaison. The records process was examined and the affected QP revised; the records training class has been developed and will be taught in 1994; and a new microfilm reader was purchased. During the records process examination, the tracking system was discussed. Changes to this system will be postponed until DOE identifies the hardware they will require us to use. This will be delayed to 1994 or 1995. The actual microfilm process is the responsibility of DOE. Over 90% of the goals were realized.

2.6.3 Goals for 1994.

- Do an in-depth study of the records process.
- Get the Project Office Liaison more involved with DOE on records issues.
- Conduct the new 17.6 class.
- Examine index and tracking system and improve as appropriate.

2.7 Controlled Documents. The majority of controlled documents issued in 1992 were QPs and DPs (Appendix D). The Controlled Document Coordinator continues to change all controlled documents to paper with the red "controlled" marking; the majority of existing documents have been changed.

2.7.1 Issues.

The controlled document system works very smoothly and there were not many associated issues. We are examining the possibility of making this system more electronic and have developed various pieces of tracking software that will eventually need to be integrated into a project-wide system.

2.7.2 Goal for 1993.

- Develop a more efficient tracking system.

A better tracking system was developed. 100% of goals were obtained.

2.7.3 Goal for 1994.

- Determine if the training and controlled document databases can be electronically linked.

2.8 Travel, Presentations, and Publications. Quality organization representatives attend Project Office meetings, workshops, training classes and provide presentations as required. For example, the QAPL and Verification Coordinator attends DOE quarterly quality assurance committee meetings. These meetings provide a forum to discuss quality issues and are an excellent arena to review proposed changes to a quality program.

Meetings attended are listed in Table IX; training classes attended and presentations are listed in Tables X and XI, respectively. Publications are found in References, Section 5.0. These include one conference article (Bolivar and Day, 1993), a management assessment report (Reese, 1993), and the 1992 Status Report (Bolivar, 1994).

2.8.1 Goal for 1993.

- The goal for 1993 is to publish one professional paper on some aspect of the quality program.

This goal was 100% completed.

2.8.2 Goals for 1994.

- Publish one professional paper on some aspect of the quality program.
- Complete the 1994 status report before the end of 1994.

2.9 Internal Audits and Surveys. Los Alamos YMP internal audits and surveys are coordinated by the Verification Coordinator. In addition to a team of professional auditors, QALs and technical personnel may be used as technical auditors. The Los Alamos YMP currently has five certified lead auditors.

Cleoves Martinez took over as Verification Coordinator over in July. Tim Ickes was hired as an auditor in November. The DOE required that we treat nonconforming samples according to the guidance in criterion fifteen in the QARD. Rather than write a procedure to do this, we agreed to follow their procedure, and Mike Clevenger was selected as Nonconformance Report Coordinator.

The procedures for audits, surveys, and certification of lead auditors were revised. Essentially, no major changes were made.

Table XII shows the 1993 Los Alamos internal audit schedule. All groups, including subcontractors, showed improvements in attitude and awareness of quality issues. Six surveys were conducted to address specific issues of concern or to qualify vendors (Table XIII). Contractors were audited at about the same time as the respective Principal Investigator. This provided a good vertical slice of activities being conducted and proved to be a very effective method of auditing. In November, the number of open deficiency reports fell below twenty. This is the first time the number of open deficiencies was below twenty since the deficiency reporting program started three years ago.

A management assessment was conducted (Reese, 1993). The assessment team suggested that the TPO and QAPL meet more frequently, that a baseline audit be conducted of the new QPs to ensure they conform to the QARD, clarify the Limited Function concept with respect to training, and consolidate and dual store the deficiency report database. These suggestions were all incorporated. There were no deficiencies identified.

Table IX. Meetings.

Meetings	Attendees	Date
Project QA Committee Meeting, Las Vegas, NV	S. Bolivar, J. Day	April
ASQC, Section Meeting, Albuquerque, NM	S. Bolivar, J. Day P. Gillespie	Feb.
Training Representatives Meeting, Las Vegas, NV; Golden, CO; Seattle, WA.	C. Chavez, S. Martinez	Feb. Sept.
Records Representatives Meeting, Las Vegas, NV	S. Martinez	Jan. Mar. April July
Tech. Integration & Methodology Analysis, Las Vegas, NV	L. Sanders	Feb.
Inform. Resources Management Council, Las Vegas, NV	L. Sanders, C. Mechels	April
Technical Data Meeting, Las Vegas, NV	P. Gillespie, D. Williams	May
SQA Conference, Las Vegas, NV	C. Mechels	Nov.
Total Quality Forum Workshop, Albuquerque, NM	S. Bolivar	Feb.
International High-level Radioactive Waste Management Conference, Las Vegas, NV	S. Bolivar, P. Gillespie D. Williams	April
American Society for Quality Control, Las Vegas, NV	S. Bolivar	May
ASQC 20th Annual Nat. Energy & Environ. Quality Div. Conf., Indian Wells, CA	S. Bolivar, J. Day P. Gillespie	Sept.

Table X. Training.

Training	Attendees	Date
Requirements Traceability Network Training (Las Vegas, NV)	S. Bolivar, P. Gillespie	Jan. May
Conflict Resolution Class (Las Vegas, NV)	S. Bolivar, P. Gillespie, J. Day (Q team attended May class)	Feb. May
Root Cause Determination, Las Vegas, NV	Q team attended	May
Systems and Network Management class, San Diego, CA	R. Morley, M. Robinson	April
Rocky Mountain Quality Conference, Denver, CO	S. Bolivar and J. Day	June
4th Dimension Database Class, San Diego, CA	M. Robinson	Nov.
Building a SQA Program for Nuclear Power Industry class, Albuquerque, NM	C. Mechels	Nov.
SE/SQA Workshop, Greenbelt, MD	C. Mechels	Dec.
Negotiation & Conflict Management Course, Los Alamos, NM	S. Bolivar	Dec.
RIDs Seminar, Las Vegas, NV	S. Martinez, J. Day	July
Performance-Based Training, Golden, CO	S. Martinez, C. Chavez	Sept.
QIG Self Assessment Workshop, Knoxville, TN	S. Bolivar	May

Table XI. Presentations.

Presentations	Presenter	Date
Status of QA Program, to TCO, Las Vegas, NV	S. Bolivar	03/10/93
The Los Alamos QA Program, to DOE Audit Team	S. Bolivar	05/24/93
Heads or Tails, to Annual YMP Meeting	S. Bolivar	02/26/93
Annual QA Update, to UNM personnel	M. Clevenger	06/23/93
Orientation for QA Program	S. Bolivar	02/25/93
The Quality Liaison: Combined Technical and Q Assurance support	S. Bolivar and J. Day	06/08/93
Annual QA Update, to LBL personnel	S. Bolivar	09/13/93
Status of the QA Program, Presentation to All Hands Meeting	S. Bolivar	11/09/93

2.9.1 Issues.

Subcontractors sometimes feel they are not an important part of the Los Alamos YMP. This perception is primarily the result of being physically distant from Los Alamos and not being involved in Los Alamos YMP daily activities. To foster better interactions, the QAPL attended several of the subcontractor preaudit meetings and provided presentations on the status of the Los Alamos YMP quality program and on how to be audited. To further enhance communications, the QALs agreed to visit the subcontractors at least once per quarter.

After several audits, the question was raised as to how many deficiency reports should be written when a group has several deficiencies. In other words, should one deficiency report be written to cover all deficiencies, or should one deficiency report be written for every deficiency. It was agreed that one deficiency report would be issued for all deficiencies covered under one procedure. If two deficiencies covered two separate procedures, then two deficiency reports would be issued.

The QAPL and Verification Coordinator met early in 1993 and discussed guidelines for improving the audit process. These issues were also discussed at several Q meetings. The following guidelines were established:

- When appropriate, audit individuals and work not previously audited. Avoid auditing the same individual each time.
- Use QALs and YMP technicians as technical auditors.
- Check for consistency between the organization chart and position descriptions, and ensure that all people working on the YMP are in the organization chart.
- Ensure that personnel have had supervisor orientation and have taken the Orientation class, if required.
- Routinely check notebooks, TIPs, software, data submissions, and M&TE.
- Before issuing audit plan, meet with investigators or QALs and determine what they have done the last year.
- Forward audit plan to QAPL two weeks before audit starts.
- Do not write a DR for deficient in-process records unless the deficiency has the potential to affect the quality of the work.
- If a DR is initiated, pencil in the name of the individual responsible for correcting the deficiency on the deficiency report form (or notify the Deficiency Report Coordinator).
- Assist the individual responsible for correcting the deficiency in formulating a corrective action.
- Identify repeat offenders.

2.9.2 Goals for 1993.

- Produce audit plans and reports in a timely manner.
- Close the two open stop work orders.
- QALs to participate as auditors on one audit, if possible.
- Use technical personnel as auditors.

As appropriate, utilize a performance-based approach.

The audit plans and reports, in general, were completed in a timely manner. One SWO was closed and the other will be closed when the new procedures are released in January 1994. Not all QALs were able to provide time as auditors. This didn't affect the verification staff since there were plenty of auditors. However, next year the QALs will be queried before the audit schedule is

determined to see if this is a reasonable request. We were not successful in recruiting technical personnel as auditors. A performance-based approach was used as much as practical, although the YMP is primarily a compliance driven program currently. Over 50% of the goals were realized.

2.9.3 Goals for 1994.

- Have QALs visit subcontractors periodically.
- Keep the number of open deficiencies under ten.
- Conduct surveys to ensure compliance to new QPs.
- Encourage technical personnel to participate as auditors.
- Determine if QALs need to participate as auditors in one audit.

2.10 Deficiency Reporting System. Mike Clevenger was selected as Deficiency Report Coordinator in April. The Q team had determined to decrease the number of open DRs in 1993 to less than twenty. This was realized in November.

In 1993, seventeen deficiencies were written, (eight deficiencies are not included, but rather tabulated with 1992 totals because they were issued in 1993 for problems recognized in December 1992 audits). Approximately 75% of Los Alamos DRs were written as the result of the audit process; 25% were written by YMP personnel not part of the audit teams. These tabulations are shown in Table XIV. The decrease in DRs issued for 1992 is dramatic. It was estimated that each DR takes at least two man weeks to resolve, thus this results in significant manpower savings.

2.10.1 Issues.

The number of conflicts for writing acceptable deficiency descriptions continues to decrease. This is primarily the result of the Verification Coordinator and Deficiency Report Coordinator working with those involved to resolve problems.

The deficiency report procedure, QP-16.3, was revised. The process essentially remained the same, although the term deficiency report (DR) was replaced by corrective action report (CAR). The term DR has a negative connotation, whereas the term CAR is more in line with the DOE's procedure. The new procedure will become effective in 1994. Procedure QP-15.3 (Deficiency Reports) had remained open so that existing DRs would not have to be transferred to QP-16.3. This QP will be deleted, and any outstanding deficiencies under this QP will be transferred to the new system.

2.10.2 Goals for 1993.

- Reduce the number of outstanding deficiencies to less than twenty.
- Hold a root cause class for QALs and auditors.

All goals were realized.

2.10.3 Goals for 1994.

- Reduce the number of outstanding deficiencies to less than fifteen.
- Revise the database for tracking deficiency reports.

Table XII. Internal Audit Schedule.

Date	Los Alamos Audit Number & Group	Criteria to be Audited										
		1	2	3	4	5	6	7	8	12	13	17
3/9-12	AR-93-01 EES-13/LV, TCO		*	*		*	*		*			*
4/19-22	AR-93-02 EES-1		*	*	*	*	*	*	*	*		*
5/4-7	AR-93-03 EES-5		*	*	*	*	*	*	*	*	*	*
6/3 - 7/2	AR-93-04 EES-13/LV, Volcanism (EES-5, INC-6)		*	*	*	*	*	*	*	*	*	*
6/23 - 7/2	AR-93-05 Volcanism (UNM)		*	*	*	*	*	*	*	*	*	*
6/10 - 7/2	AR-93-06 Volcanism (Ohio St. Univ.)		*	*	*	*	*	*	*	*	*	*
6/28 - 7/2	AR-93-04 Volcanism (EES-13/LV, UC-Riverside)	*	*	*	*	*	*	*	*	*		*
7/19-23	AR-93-07 EES-13		*	*	*	*	*	*	*	*	*	*
8/33-27	AR-93-08 EES-4, EES-15		*	*	*	*	*	*	*	*	*	*
9/13-14	AR-93-09 INC (Stanford Univ.)		*	*	*	*	*	*	*	*	*	*
9/15-17	AR-93-10 INC (L. Berk. Lab)		*	*	*	*	*	*	*	*	*	*
12/1-3	AR-93-11 INC (H.GeoChem)		*	*	*	*	*	*	*	*	*	*
11/16-19	AR-93-12 INC		*	*	*	*	*	*	*	*	*	*

Table XIII. Internal Survey Schedule.

Survey Number & Organization Surveyed	Location of Survey	Date of Survey	Reason for Survey	Def. Reports Issued
SR-93-01 (SIMCO)	Los Alamos, NM	01/28/93	Supplier, annual evaluation	None
SR-93-02 (EES-13)	Los Alamos, NM	08/4-20/93	Interface Control	None
SR-93-03 (Mettler Instrument Corp.)	Los Alamos, NM	04/18/93	Supplier, annual evaluation	None
SR-93-04 (EES-13/LV, Volcanism)	Las Vegas, NV	10/22-25/93	Verify notebook deficiencies fixed	None
SR-93-05 (Rainin Inst. Co.)	Los Alamos, NM	10/26/93	Supplier, annual evaluation	None
SR-93-06 (EES-13)	Los Alamos, NM	12/9/93 - 01/14/94	RTN verification	None

Table XIV. Deficiencies Issued Annually.

Year	Deficiency
1990	128
1991	65
1992	22
1993	17

2.11 Efforts to Increase Awareness of the Quality Program. Four major activities were used to foster recognition of the quality program. The first was an annual YMP meeting in February to address YMP issues. Over sixty YMP personnel attended. Presentations included topics on quality assurance, regulatory issues, and the TCO (Table XV). Other activities included a State of the Project meeting, also held in February, at which C. Gertz provided a presentation on the "State of the YMP". Two quality program information brochures were issued in January and September. Lastly, on November 11, Los Alamos personnel attended the FY94 Kickoff meeting where major DOE organizational changes, new EES-13 staff, and a budget update were presented.

A Quality Forum was held in August. Frank Hawkins (DOE) and Mark Bodnarczuk (Fermi Lab) were guest speakers. In October there was an NRC/DOE Interaction Site Visit at the Laboratory. B. Romero was selected as the new Quality Concerns Coordinator. Quality concerns information brochures have been posted at various locations in the Laboratory and Las Vegas offices.

2.11.1 Issues.

The Los Alamos YMP information brochure (The Quality Connection) was only published twice due to funding constraints and other commitments. The brochure provided information on new regulations, current YMP events, and discussions on quality issues. This brochure has been a successful method of informing Los Alamos YMP personnel of quality issues, but has not been published regularly. This probably dilutes its message. It remains difficult for the QAPL to find time to allocate for providing this publication.

2.11.2 Goals for 1993.

- Hold one annual all hands meeting.
- Publish the Quality Connection quarterly.

Two all hands meetings were held; however only two Quality Connection brochures were published. About 75% of the goals were realized.

2.11.3 Goals for 1994.

- Hold one annual all hands meeting.
- Publish the Quality Connection at least twice.

Table XV. Program Agenda for the Annual YMP Meeting

Subject	Speaker
YMP QA- Heads and Tails	Stephen L. Bolivar, QAPL
The PI and Closure	Chuck Harrington, EES-1
Laboratory QA- How does it help the scientist?	John T. Whetten, ADQPP
The TCO; Who are these guys?	Ned Z. Elkins, Deputy TPO
We really do have a budget.	Julie A. Canepa, TPO

3.0 TREND ANALYSIS

3.1 Introduction. The purpose of this section is to summarize the four trend reports issued in 1993. DOE and internal audit and surveillance reports, stop work orders, and other quality assurance documents, such as the corrective action report log, are examined periodically to determine if any adverse trends exist and to give the status of any previously recognized adverse trends.

An adverse trend is defined as a repetitive or frequent occurrence of a condition adverse to quality, or occurrence of similar conditions adverse to quality that suggest a systematic weakness in the quality program. Adverse trends in this status report can be compared with past and future reports to evaluate the quality program.

The number of deficiencies issued during a calendar year can provide a first approximation of the status of a quality assurance program. In calendar year 1991, 65 internal deficiencies were issued. In 1992, 22 were issued. In 1993, the total was 17, still showing a decrease.

However, a quality assurance program consists of many parts in which problems may occur (e.g. program development, verification activities, training, etc). This section examines not only the frequency of deficiencies but also includes comparisons of both Los Alamos groups and other Participants.

3.2 Methodology. The Los Alamos deficiency report (DR) log was examined to determine the status of deficiencies. Individual DRs were then examined and categorized. First, in accordance with previous progress reports, DRs were grouped according to the quality administrative procedure the deficiency occurred in. The procedure's revision number and section in which the violation occurs are recorded, if known (Appendix E). This allows identification of procedures that are habitually violated. Deficiencies are then categorized according to the Los Alamos group that the deficiency was assigned to. This category can be examined to identify groups that are assigned large numbers of deficiencies.

The probable causes of deficiencies, when available, are examined and categorized into a) not trained to procedure, b) failure to follow procedural guidance, c) conflicting procedural guidance, and d) oversight. There also is a category for deficiencies written against measuring and test equipment (M&TE) out of calibration. It is possible for a single deficiency to occur in more than one category.

A similar categorization is done for corrective action reports (CARs) received from DOE audits and surveys. However, a group category is not identified because the deficiency usually is a Laboratory-wide occurrence.

Lastly, DOE and Los Alamos audit and survey reports, and Los Alamos conflict resolution and stop work order logs are examined. Most deficiencies are captured in the Los Alamos DR log, therefore these reports are used predominantly to identify deficiencies that have been fixed during audits and surveys. Conflict resolution and stop work order logs are examined on a case by case basis because occurrences in these logs are not always associated with a deficiency.

3.3 Internal Audits and Surveys. During 1993 twelve audits were conducted. All audit reports were issued within two to three weeks after the audit was completed. Table XVI lists the findings.

Table XVI. Summary of Internal Audit Findings .

Audit Number	Group	Number of Deficiencies Identified	Deficiency Reports Issued	Implementation Acceptable
LANL-AR-93-01	TCO	Eight	DR 217	Yes
LANL-AR-93-02	EES-1	Six	DR 219 DR 220 DR 221 (issued to records)	Criterion 2 needs attention
LANL-AR-93-03	EES-5	None	None	Yes
LANL-AR-93-04	EES-13 Volcanism (EES-5, INC-6, UC Riverside)	Eighteen	None	Criteria 3,8,12 need attention
LANL-AR-93-05	EES-13 Volcanism (UNM)	One	None	Yes
LANL-AR-93-06	EES-13 Volcanism (OSU)	Two	None	Yes
LANL-AR-93-07	EES-13	Nine	DR 225 DR 226 DR 227	Criteria 2,5,8 need attention
LANL-AR-93-08	EES-4 & EES-15	None		Yes
LANL-AR-93-09	INC (SU)	Thirteen	DR 229	Criteria 2,4,6,7,12,17 need attention
LANL-AR-93-10	INC (LBL)	Eighteen	DR 230	Criteria 2,4 need attention
LANL-AR-93-11	INC (HydroGeoChem)	None	None	Yes
LANL-AR-93-12	INC	Seventeen	DR 231 DR 232	Criteria 2,3,4,6,17 need attention

One situation deserves comment. The number of deficiencies for some groups is higher than might be expected. Most of the recognized problems are minor and have to do with lack of attention to detail. More importantly, in general, the number of formal deficiency reports (DRs) has decreased. To see if a problem truly exists, specific deficiencies have to be examined. However, because all QPs are scheduled to be revised in 1994, it may be several months before any adverse trends become apparent. To ensure that potential problems can be addressed, more QAL assistance has been allocated for group EES-1 and for some of the contractors. The pervasive lack of attention to detail is a Laboratory-wide issue, and it will cease only when quality assurance is an everyday part of an investigator's normal routine. Lastly, the increase in deficiencies is partly attributable to a new way of accounting, i.e. each deficiency is listed separately. Since deficiencies corrected during audits are not a serious problem to begin with, the relative seriousness of these minor problems must be kept in perspective. These deficiencies do not appear to be indicative of major problems.

3.4 Internal Deficiencies. From January through December, 1993, twenty-five deficiency reports were issued. However, several 1992 audit reports were not completed until January 1993, whereby eight DRs were issued. Since these were issued for problems recognized in December 1992 audits, the eight DRs are included with 1992 averages. Thus only seventeen DRs are attributed to 1993 activities; this compares to twenty two DRs issued in 1992. The total DRs issued since 1990 shows an annual decrease. The actual DRs are listed in Table XVII.

3.5 Stop Work Orders and Conflict Resolutions. Stop work orders (SWOs) are not to be used as a punitive measure, but rather to selectively stop activities. Stop work order SWO-LA-08 was issued against the computational data section of the software procedures. This was based on a management decision that control will be through the notebook procedure rather than through the configuration management process. SWO-LA-08 will be closed after the software procedures are revised (Table XVIII). Stop work order (SWO-LA-03) was closed when the appropriate record package had been fixed. No new conflict resolutions occurred.

3.6 DOE Audits, Surveillances, and Issued Deficiencies. The DOE conducted two surveillances and one audit in 1993 (Table XIX). Although three deficiencies were fixed during the audit and three corrective action reports (CARs) were written, Los Alamos performed satisfactorily in the audited criteria. The surveillances were conducted to check on sampling issues (YMP-SR-93-046) and to verify implementation of a job package (YMP-SR-94-014). There were no findings. The Los Alamos YMP ended 1993 with no open CARs. This is the first time since the deficiency program began in 1989 that there were no open CARs. The 1993 CAR status activity is shown in Table XX. Adverse trends are described in Section 3.7.

3.7 Status of Adverse Trends and Significant Conditions Adverse to Quality. There were no significant conditions adverse to quality (SCAQ) issued in the last twelve months. In our program, only one SCAQ has been issued (for lack of a software program), and it was closed in 1990.

A list of adverse trends is shown in Table XXI. In 1993, trend AT-91-01 was closed. Adverse trend

Table XVII. Internal Deficiency Reports Issued in 1993.

Deficiency Report	Group	Description
DR 216	EES-13, M&TE	Not trained to latest M&TE procedure (training was done but not documented)
DR 217	EES-13, TCO	QP draft missing header pages
DR 218	LATA, Records	Inventory list missing (self imposed excessive requirement)
DR 219	EES-1	Not trained to DP
DR 220	EES-1, M&TE	Notebook entry not ID M&TE uniquely
DR 221	EES-13, Records	Records Coordinator not trained to QP-06.3
DR 222	EES-13, Software	Life cycle software procedures not followed
DR 223	LATA	Unauthorized signature and wrong TWS# assigned
DR 224	EES-4	No QAL review on purchase request
DR 225	EES-13, Data	Data Coordinator did not follow procedure
DR 226	EES-13, QA	QP Action Request not signed
DR 227	EES-13	WBS number not on PD
DR 228	EES-1, M&TE	Balance out of calibration
DR 229	SU	PQEF form not verified
DR 230	LBL	Proficiency evaluation not done
DR 231	INC	PQEF form not verified
DR 232	INC	Incorrect reference to DP

AT-93-01 will remain open until our procedures are revised to meet the new QARD requirements.

Internal DRs and DOE deficiencies issued in the last twelve months were examined (Tables XVII and XX). The majority of deficiencies represent isolated instances of nonconformance. However, one situation may be developing that will require further surveillance. This is discussed in the following paragraphs.

Deficiency reports DR 216, 219, 221 and CAR YM-93-051 involve training. Deficiency DR 216 was a minor infraction where the training was done but the documentation was not correctly dual stored. The DR 221 revealed the Records Coordinator had to unnecessarily train to a procedure. The CAR had to do with poor verbiage in a procedure that required all limited function employees to train to orientation. This was not the intent. These procedures have since been fixed. Only DR 219 involved someone actually not trained.

DRs 222 and CARs 93-018 and 019 have to do with software. Since the software procedures will be revised in 1994, and all three deficiencies are minor in nature, no further action is planned. Two DRs, 220 and 228, and CAR YM-93-051 involve M&TE; however, one deficiency had to do with an improper notebook entry, one had to do with a traceability issue within a record package, and the third had to do with an instrument out of calibration. No adverse trends are recognized.

Table XVIII. Status of Los Alamos Stop Work Orders (SWO) and Conflict Resolutions (CR)

SWO or CR	Description	Status
SWO-LA-01	Software Stop Work	Closed 1-28-91
SWO-LA-02	SEA failed to follow QPs in criterion two	Closed 3-4-92
SWO-LA-03	Volcanism/USGS failed to follow QPs	Closed 11-3-93
SWO-LA-04	HydroGeoChem had inadequate QA program	Closed 11-4-90
SWO-LA-05	Bid evaluation section missing in QP-04.5	Closed 12-15-92
SWO-LA-06	QP-03.5 and QP-03.17 are in conflict	Closed 12-15-92
SWO-LA-07	Prevent sending records to YMP until QP-17.3 revised	Closed 3-4-92
SWO-LA-08	Against SQAP, Fig. 1 & Computational Data QP	Open
LA-CR-001	Purchase request protocol	Resolved

Table XIX. 1993 DOE Audits and Surveys of the Los Alamos YMP.

Activity	Date	Result
Audit YMP-93-011	May 24-28	Three deficiencies fixed during audit, CARs 93-049, -050, -051 issued.
Survey YMP-SR-93-046	Sept 30-Oct 26	No deficiencies.
Survey YMP-SR-94-014	Dec 6	No deficiencies.

Table XX. Status of Los Alamos Corrective Action Reports.

Deficiency	Result	Status
CAR YM-91-041 (QAPP and procedures are not consistent)	Audit YMP 91-03	Closed 12/7/93
CAR YM-92-058 (Notebook review not done)	Surveillance YMP-SR-92-006	Closed 1/29/93
CAR YM-93-018 (Software- minor procedural violation)	Audit YMP-93-02	Closed 2/25/93
CAR YM-93-019 (Software- minor procedural violation)	Audit YMP-93-02	Closed 1/15/93
CAR YM-93-049 (Interface procedure not followed)	Audit YMP-93-11	Closed 11/17/93
CAR YM-93-050 (record package pages not numbered)	Audit YMP-93-11	Closed 8/12/93
CAR YM-93-051 (Training requirements in question-minor procedural violation)	Audit YMP-93-11	Closed 11/2/93

3.8 Participant Comparisons. Many factors, such as the scope and complexity of work, contribute to the effectiveness of a Participant's quality program. However, if one compares the total number of deficiencies issued (and fixed) during YMP audits and surveillances, a relative measure of compliance to regulations can be inferred. For calendar year 1992 the Los Alamos quality program favorably compares to other Participant's programs. Discussion of this comparison follows.

To determine the status of the Los Alamos quality program with respect to other Project Participants' programs, the number of deficiencies identified during 1993 YMP audits and surveillances were plotted for each Participant. Figure 2 shows data for deficiencies issued during annual audits. These data include deficiencies fixed during audits. The deficiencies are scaled, i.e. those fixed during audits are assigned one point, and those issued are assigned two points.

Unfortunately, Fig. 2 gives a somewhat biased view of a Participant's program. Figure 2 does not include CARS issued as the result of surveillances or other assessment activities. The US Department of Energy Office of Civilian Radioactive Waste Management (1993) issued a report that tabulates all CARS issued to Participants (Fig 3). This is probably a better representation of a Participant's overall program.

Deficiencies issued to Los Alamos for the period 1987 to 1993 are displayed in Fig. 4. The number of formal deficiencies issued, as well as the number of deficiencies fixed during audits (fixes), generally decreases from 1987 to 1992. This indicates a trend of annual improvement. There also is a noticeable decrease in the number of deficiencies issued post 1991 compared to previous years. Los Alamos personnel have made significant improvements in their quality efforts post 1991.

Table XXI. Adverse Trends.

Trend	Trend Description	Status
AT-91-01	Excessive number of DRs issued against QAPP (QAPP and QPs not consistent).	Closed (CAR-90-041 closed on 12-7-93)
AT-91-02	Excessive number of DRs issued against QP-02.5. QP-02.5 needs to be revised.	Closed (QP-02.5 issued on 9-30-91)
AT-91-03	Excessive number of DRs issued against QPs-03.3 and -03.2. Procedures hard to follow and Project guidance for QP-03.3 has changed. Procedure needs to be revised.	Closed (QP-03.23 issued on 3-16-92; QPs-03.2 & -03.3 superseded)
AT-91-04	Excessive number of DRs issued against QP-03.5. Conflicting guidance for notebook corrections with QP-17.3. Need to revise QP-03.5.	Closed (QP-03.5 issued 12-7-92)
AT-91-05	Excessive number of DRs issued against QP-04.1 in 1990. Requirements are confusing and overly restrictive. Need to revise QP-04.1.	Closed (QP-04.1 superseded by QP-04.4 on 11-15-91 & QP-04.5 on 12-23-91)
AT-91-06	Excessive number of DRs issued against QP-12.1. Procedure is difficult to follow. Need to revise QP-12.1.	Closed (QP-12.1 issued on 5-8-92)
AT-91-07	Excessive number of DRs issued against QP 17.3. Procedure needs to be simplified and new Project requirements incorporated.	Closed (QPs-17.4 & -17.5 issued on 2-28-92; SWO-LA-07 lifted 3-4-92)
AT-93-01	Excessive number of DRs issued against software program. Software procedures to be revised.	Open

3.9 Group Trends. During the calendar year the Los Alamos Verification Coordinator conducted several internal audits of various groups, including subcontractors, working on Los Alamos YMP activities. The number of internal deficiencies issued against these groups for the last three years is shown in Table XXII.

The number of deficiencies a particular group receives reflects several factors. For example, management groups might have more deficiencies simply because all activities are coordinated through these offices. Certain groups might have several deficiencies simply because of the volume of activity associated with their activity. In other words, the number of deficiencies issued against a group must be placed in overall context before it can be considered significant.

The number of formal deficiency reports issued to any respective group in 1993 is about the same as the level for the last two years. However, the number of deficiencies fixed during audits is

significantly increased for several groups. The majority of these problems have to do with lack of attention to detail, mostly with record packages for notebooks. A record management class will be developed in 1994 to stress the importance of attention to detail.

Table XXII. Los Alamos Deficiencies by Group.

Group	1991	1992	1993
EES-1	5 (5 fixes)	2 (3 fixes)	3 (6 fixes)
EES-4	2 (1 fix)	0 (1 fix)	1
EES-5	7	0 (4 fixes)	0
EES-13 Management	10	0 (1 fix)	3 (9 fixes)
EES-13 Software	N/A	7 (1 fix); SWO-08	1
EES-13/LV TCO	0 (4 fixes)	0	1 (8 fixes)
EES-13/LV, VOLC	0 (3 fixes)	2 (5 fixes)	0 (18 fixes)
EES-15	1 (1 fix)	0 (1 fixes)	0
INC	10 (4 fixes)	1	3 (17 fixes)
UC-Riverside	0	0	0
UNM	3 (3 fixes)	1 (3 fixes)	0 (1 fix)
LBL	5 (8 fixes)	1 (3 fixes)	0 (18 fixes)
SU	3 (3 fixes)	N/A	1 (13 fixes)
HGC	2 (2 fixes)	1	0
OSU/CS	1 (2 fixes)	0 (3 fixes)	0 (2 fixes)
M&TE	1	0	1
Records	1; SWO-07	1	2
Controlled Docs	0	0	0
Training	1	0	0
Audits	3	1	1
QA Organization	7; SWO-05, 06	2	0

Key: N/A=Not applicable; SWO=Stop Work Order; All INC groups combined under INC; Deficiencies fixed during audits are listed in parentheses.

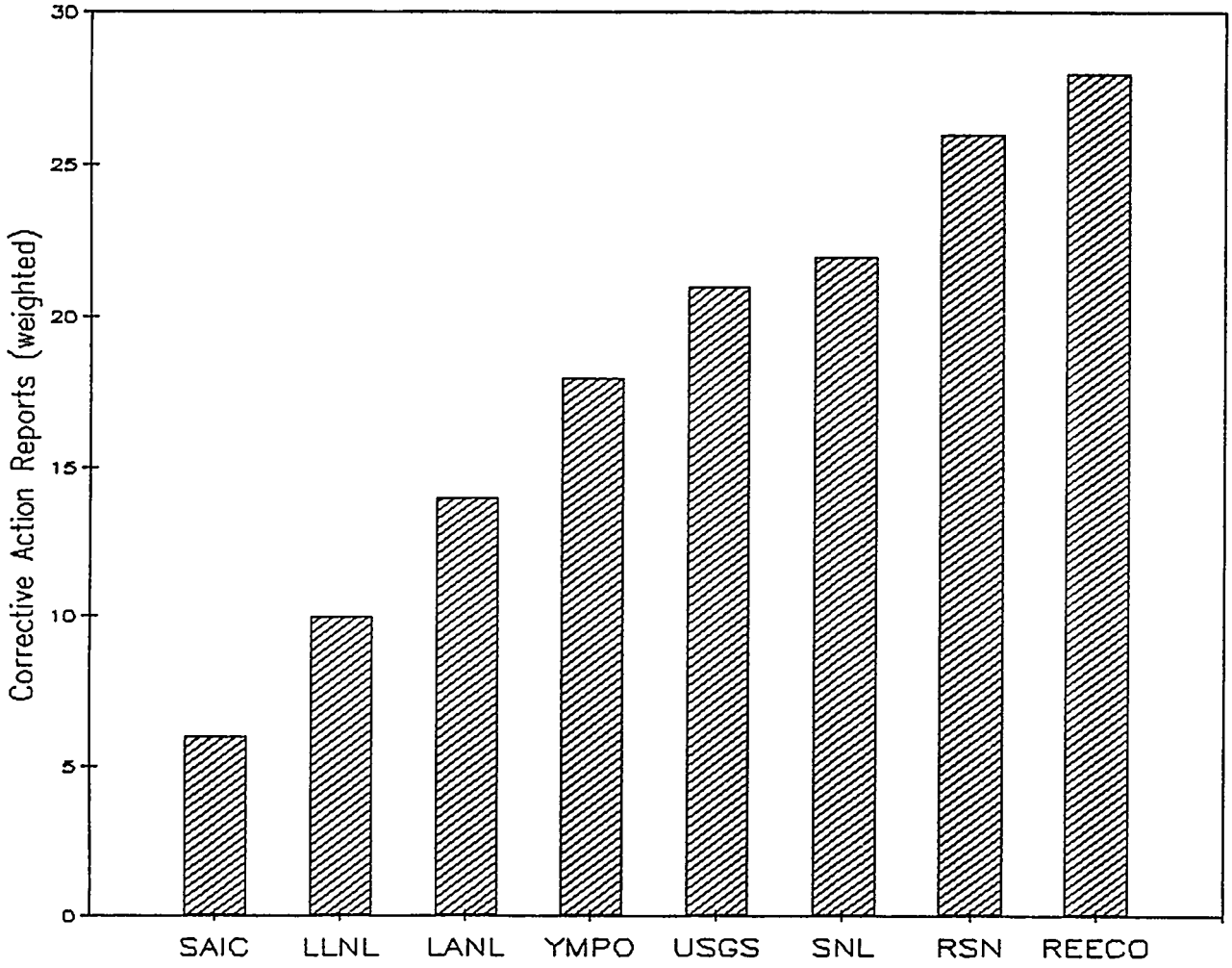

Fig. 2. Corrective Action Reports Resulting From DOE Audits. Corrective action reports are weighted; those formally issued are multiplied by two, whereas those fixed during audits are multiplied by one. (Key: SAIC= Scientific Applications International Corporation; LLNL= Lawrence Livermore National Laboratory; LANL= Los Alamos National Laboratory; YMPO= Yucca Mountain Project Office; USGS= United States Geological Survey; SNL= Sandia National Laboratories; RSN= Rayethon Services Nevada; REECO= Reynolds Electric Company).

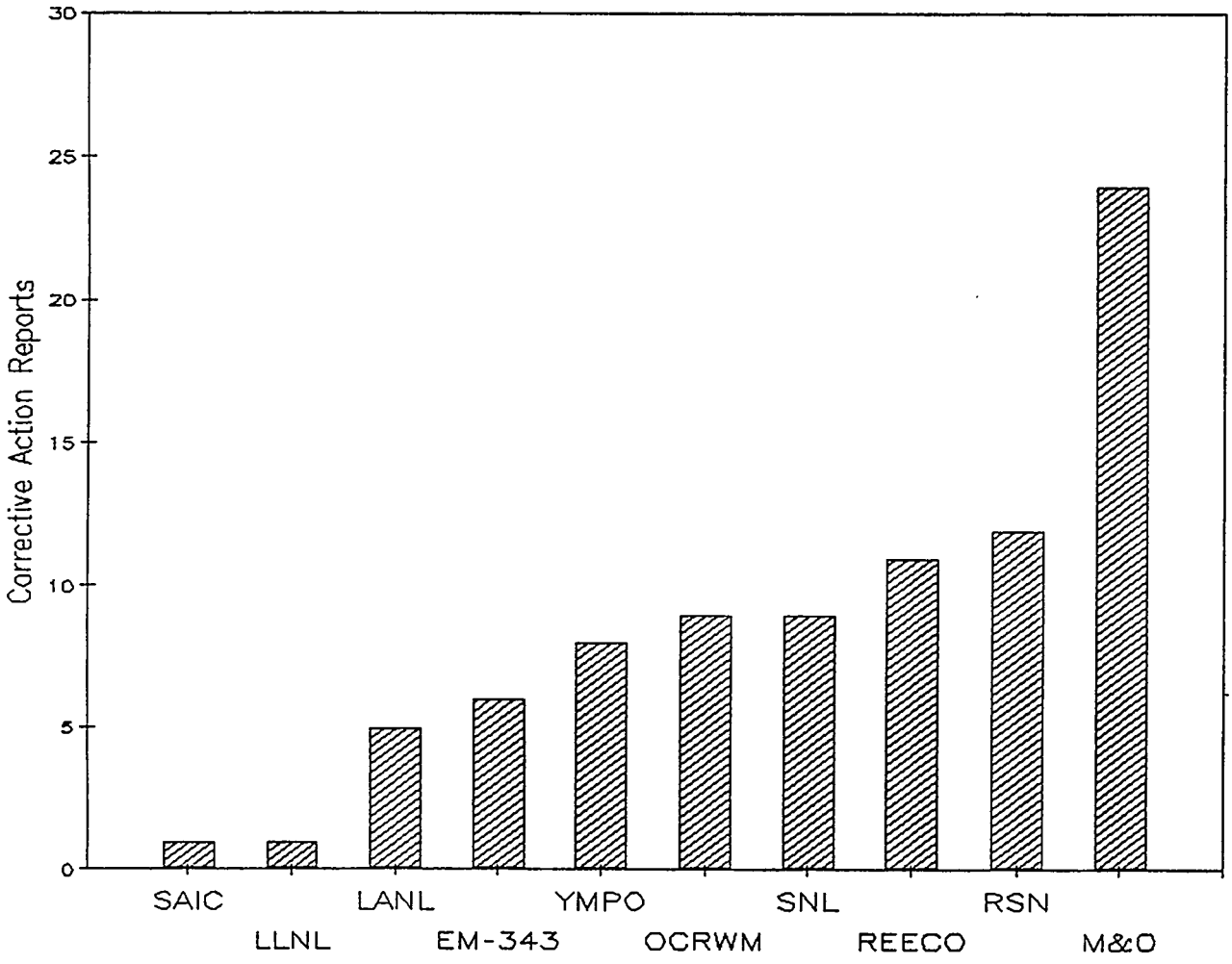

Fig. 3. Corrective Action Reports Resulting From All DOE Verification Activities. The corrective action reports are not weighted. (Key: SAIC= Scientific Applications International Corporation; LLNL= Lawrence Livermore National Laboratory; LANL= Los Alamos National Laboratory; EM-343 is a Washington DC Department of Energy group working on YMP issues; YMPO= Yucca Mountain Project Office; OCRWM= Office of Civilian Radioactive Waste Management; SNL= Sandia National Laboratories; REECO= Reynolds Electric Company; RSN= Rayethon Services Nevada; M&O= Management and Operations Contractor).

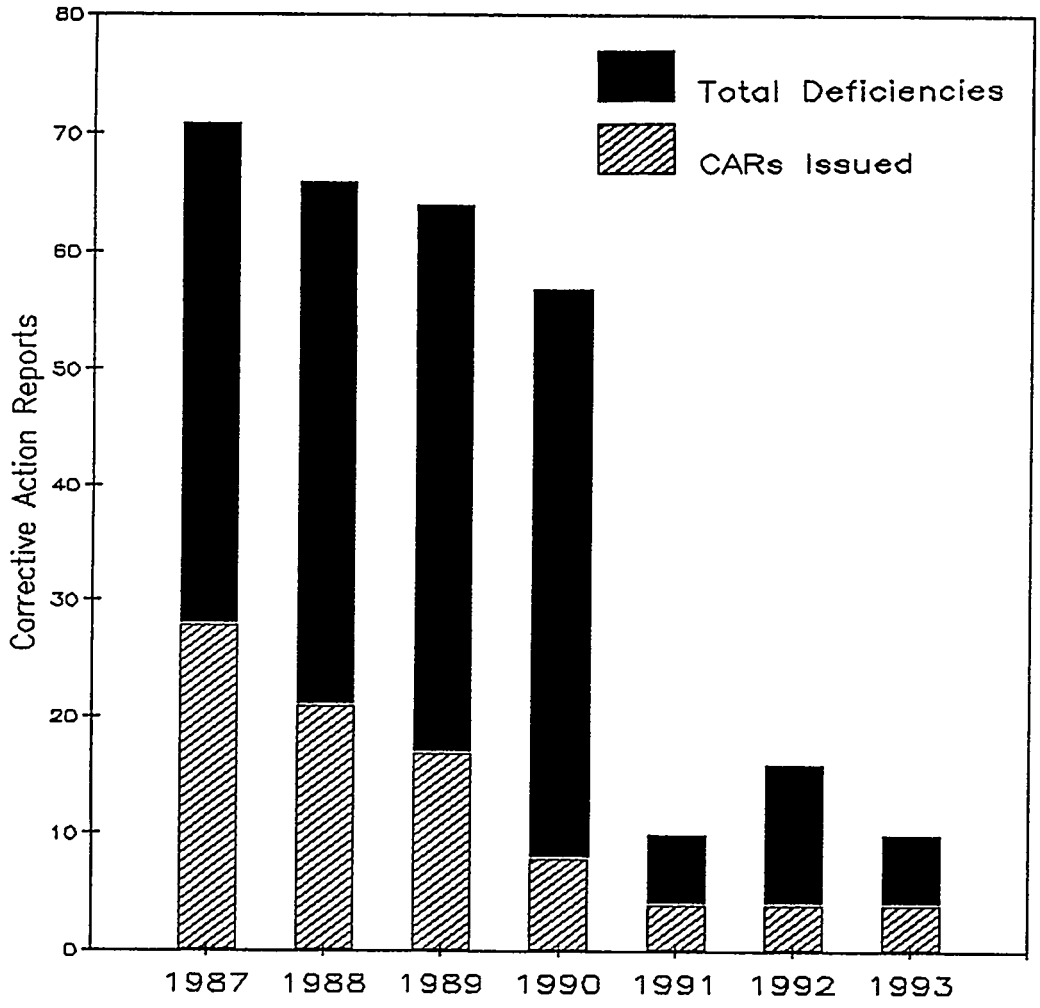

Fig. 4. Corrective Action Reports Assigned to Los Alamos by the DOE. Plot shows both total deficiencies identified (solid bars) and deficiencies issued as a corrective action report (stippled bars). Deficiencies are for audits and surveillances and are not weighted.

3.10 Possible Adverse Trends Associated with Criteria or Procedures. The DR log was examined and deficiencies were categorized by assigning them to the respective QARD criterion they are associated with. A large number of DRs associated with a criterion does not necessarily signify an adverse trend, but does help identify areas of concern. Figure 5 shows this data grouped by criteria; obviously criteria two and three are possible areas of concern. However, to determine if an adverse trend exists, the data must be examined in greater detail.

Appendix E lists the number of deficiencies issued for respective QPs. Table XXIII shows those current procedures for which more than two deficiencies were issued in 1993. An adverse trend might be suspected if the number of deficiencies associated with any one QP is large; however, recognition of adverse trends by this method is very subjective. One must look at the reasons for each deficiency before a true adverse trend can be identified.

Table XXIII. Deficiencies issued correlated with Procedures (only those with more than 2 deficiencies are listed).

Plan or Procedure	Number of Deficiencies
QP-02.5	6
QP-02.7	6
QP-02.11	3
QP-03.5	4
QP-04.4	3
QP-06.1	3
QP-12.1	4
QP-17.4	6

A possible adverse trend might be suggested by the magnitude of deficiencies associated with a specific procedure, e.g. there are numerous deficiencies associated with QPs-02.5, -02.7 and -17.4. However, the number of deficiencies is not considered excessive because of the volume of activity related to these procedures. The only common thread might be a lack of attention to detail. A record management class will be developed in 1994 to address this issue. However, the number of deficiencies found is not excessive for the amount of work done, and since all procedures will be revised in 1994 to conform to new QARD requirements, it is a moot point to further discuss potential adverse trends.

3.11 Trends Identified with Probable Cause Determination. After examining all Los Alamos internal DRs, it became evident that probable causes could be placed into a select number of

categories. This assumes that the resolver of a DR did a correct probable cause determination, and this may not be valid for all DRs. However, this approach does reveal some interesting information.

The probable cause categories are a) not trained (Table XXIV), b) failure to follow procedural guidance (Table XXV), c) conflicting procedural guidance (Table XXVI), d) oversight (Table XXVII), and e) M&TE (Table XXVIII). These data are shown in Fig. 6. Large numbers of associated deficiencies do not necessarily identify an adverse trend; as mentioned above, the data must be placed into context of the overall program.

Probable causes attributed to failure to follow procedural guidance category (Table XXV), oversight (Table XXVII)and M&TE (Table XXVIII) are decreased or similar to 1991 and 1992 levels. These totals do not merit further discussion.

There is a noticeable increase in causes attributable to lack of training and conflicting procedural guidance (Tables XXIV and XXVI). The training issue was discussed in Section 3.7; there does not appear to be a significant trend associated with the training issue.

The problems with failure to follow procedural guidance are difficult to quantify because there are a large number of possible causes. A procedure may be to difficult to follow. Or possibly, deficiencies may have been issued to individuals with an attitude problem. After examining individual DRs, it appears that this category resulted from procedures providing poor or conflicting guidance. As the YMP matures and as individuals become more familiar with processes, the bugs get worked out. In both training and failure to follow procedural guidance, the majority of problems can be attributed to oversights or failure to pay attention to detail, and the problems are comparatively minor. No adverse trends are recognized.

Table XXIV. Deficiencies Attributed to Lack of Training (numbering scheme explained in Appendix E).

1991		1992		1993	
Deficiency/ Associated Procedure		Deficiency/ Associated Procedure		Deficiency/ Associated Procedure	
DR 133	QP-17.3	92-13-001	QP-03.5	DR 216	QP-17.4
DR 145	QP-03.3	DR 213	QP-06.2	DR 216	QP-12.1
DR 147	QP-03.3	DR 205	QP-02.7	DR 219	DP-101
DR 150	QP-04.1	DR 207	LBL-DP-13	DR 221	QP-06.3
DR 156	SQAP	DR 214	QP-06.2	CAR-93-051	QP-17.4
DR 173	QP-03.5	DR 213	QP-06.2	93-04-04	DP 606
DR 192	DP 14			93-12-05	QP-06.1
DR 187	DP 35			93-09-04	QP-06.1
				93-05-01	QP-02.7
				93-10-03	QP-02.11
				93-12-03	DP 86
				93-09-03	QP-04.4
				93-10-02	QP-02.7

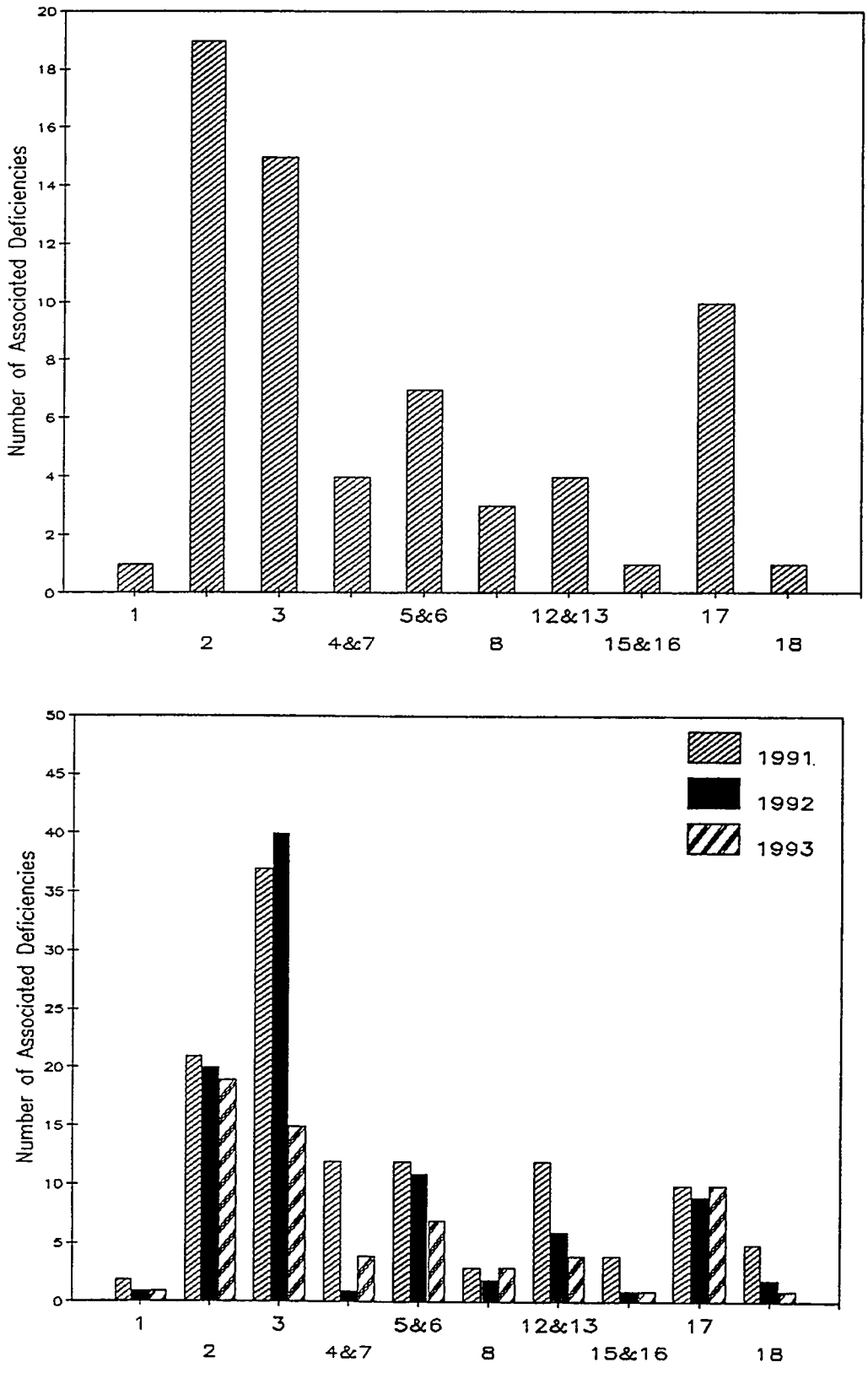

Fig. 5. Internal Deficiencies Correlated by Criteria. Top graph shows deficiencies associated with respective QARD criteria for 1993, whereas bottom graph shows the data for 1991-1993. Deficiencies include both those formally issued and those fixed during internal audits.

Table XXV. Deficiencies Attributed to Failure to Follow Procedural Guidance (numbering scheme explained in Appendix E).

1991		1992		1993	
Deficiency	Deficiency Fixed	Deficiency	Deficiency Fixed	Deficiency	Deficiency Fixed
DR 132	YA-91-03-1	DR 194	92-001-2	DR 217	93-01-01
DR 133	YA-91-03-2	DR 196	92-002-1	DR 225	93-07-01
DR 135	YA-91-03-7	DR 197	92-002-2	DR 227	93-09-02
DR 138	YA-91-03-9	DR 198	92-002-5	DR 222	93-10-03
DR 139	91-002-3	DR 200	92-003-3		93-12-01
DR 140	91-003-1	DR 202	YA-92-12-01		93-12-04
DR 141	91-003-2	CAR-92-058	YA-92-12-02		93-10-01
DR 142	91-003-4	DR 206	YA-92-12-03		93-10-04
DR 144	91-004-1	DR 209	92-006-3		
DR 147	91-004-3	DR 211	92-10-002		
DR 148	91-006-1	DR 214	92-10-003		
DR 149	91-008-1	DR 215	92-13-002		
DR 151	91-008-2	DR 208			
DR 152	91-008-3	DR 210			
DR 154	91-008-4				
DR 158	91-013-2				
DR 159	91-013-3				
DR 160	91-003-5				
DR 161	91-14-1				
DR 162	91-14-2				
DR 163	91-15-1				
DR 164	91-10-1				
DR 165	91-10-2				
DR 166	91-11-1				
DR 167	91-11-2				
DR 168	91-11-3				
CAR-91-041					
CAR-92-002					
CAR-92-001					
CAR-92-003					
DR 170					
DR 173					
DR 174					
DR 178					
DR 179					
DR 180					
DR 184					
DR 185					
DR 186					
DR 189					
DR 188					
DR 187					
DR 191					
DR 192					
DR 193					

Table XXVI. Deficiencies Attributed to Conflicting Procedural Guidance (numbering scheme explained in Appendix E).

1991		1992		1993	
Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed
DR 131	YA-92-01-1	CAR-92-057		CAR-93-049	YA-93-11-1
DR 136	YA-91-03-6	CAR-92-058		CAR-93-050	93-04-03
DR 139	YA-91-03-8	CAR-92-018		CAR-93-051	
DR 141	YA-91-03-1	DR 210		DR 226	
DR 142	91-001-2	DR 211		DR 218	
DR 147	91-001-4	DR 199		DR 220	
DR 153	91-002-1	DR 212		DR 221	
DR 159	91-002-2			DR 222	
DR 157	91-006-1			DR 232	
DR 160					
DR 163					
DR 164					
DR 165					
DR 169					
DR 168					
CAR-91-041					
SWO-LA-05					
SWO-LA-06					
SWO-LA-07					
CAR-92-002					
CAR-92-001					
CAR-92-003					
DR 167					
DR 169					
DR 172					
DR 187					
DR 190					
DR 194					
DR 189					

Table XXVII. Deficiencies Attributed to Oversight (numbering scheme explained in Appendix E).

1991		1992		1993	
Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed
DR 129	Y-91-03-3	DR 195	92-001-1	DR 217	YA-93-11-02
DR 130	Y-91-03-5	DR 197	92-001-3	DR 223	YA-93-11-03
DR 142	Y-91-03-4	DR 200	92-002-3	DR 224	93-12-06
DR 145	91-001-1	DR 201	92-002-4	DR 229	93-02-01
DR 153	91-003-3	DR 204	92-003-1	DR 230	93-02-02
DR 146	91-004-2	DR 205	92-004-1		93-09-05
DR 157	91-013-1	DR 206	92-004-2		93-04-01
DR 162		DR 210	92-004-3		93-04-02
DR 170		DR 212	92-006-2		93-09-06
DR 171		CAR-93-019	92-006-3		93-12-05
DR 174			92-006-4		93-06-01
DR 177			Y-92-19-01		93-06-02
DR 178			Y-92-19-02		93-07-02
DR 179			Y-92-19-03		93-10-02
DR 182			Y-92-19-04		93-09-01
DR 183			92-10-001		93-12-02
DR 186			92-17-001		93-12-04
DR 187			92-08-001		93-09-03
					93-10-04

Table XXVIII. Deficiencies Attributed to M&TE (numbering scheme explained in Appendix E).

1991		1992		1993	
Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed	Deficiencies	Deficiencies Fixed
DR 137	Bal PN625058	DR 203	Bal PN757327	DR 228	Bal PN620505
YA-91-03-4	Bal PN625058				
DR 171	Bal PN625058				
	Bal PN608838				
DR 176	Bal D09584				
	Bal PN447337				
DR 141	Wts not listed				

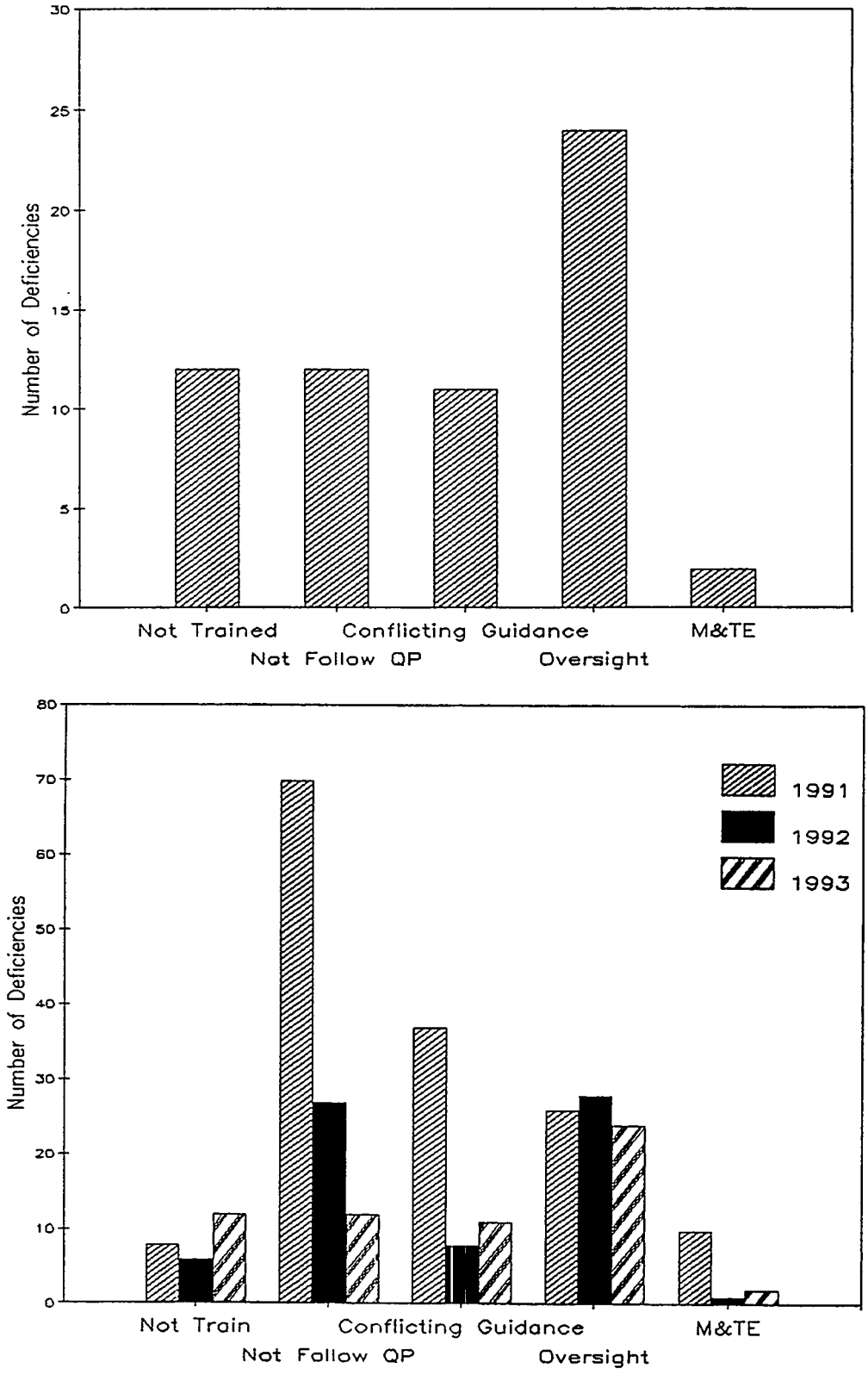

Fig. 6. Deficiencies Assigned to Probable Cause Categories. Top graph shows groupings for 1993. Bottom graph shows data for 1990-1993.

4.0 SUMMARY

The Los Alamos quality organization, consisting of the contributors to this report, met periodically to discuss and resolve YMP quality issues. Documentation of the results of these meetings are discussed herein. The most important issues addressed were the revision of all quality administrative procedures and formal training classes. These revisions were in response to the new Quality Assurance Requirements and Description (QARD) document, which identifies the quality assurance requirements for the YMP. A new electronic training database was incorporated and a new records management class was developed. We used a matrix to identify where QARD requirements are met in our implementing procedures. This was done in the requirements traceability network database. The new procedures were sent to the DOE in December 1993 for review. Efforts in 1994 will be devoted to resolving the DOE comments. Program development activities in 1994 may require minor changes to these procedures.

Verification activities have helped the quality organization identify specific problems in the Los Alamos YMP. These problems are addressed as resolution to deficiencies issued as part of internal or DOE verification activities. The number of deficiency reports issued in 1993 was seventeen. The number of deficiencies issued since 1987 continues to decrease annually.

Trend analysis reports were issued quarterly in 1993 and the results are summarized here. In an effort to show comparisons of relative compliance to regulations, without consideration to scope or complexity of work, the summary includes comparisons between Participants with respect to issued corrective action reports. When the number of corrective action reports issued by the DOE is examined, the number issued to the Los Alamos YMP quality program is minimal compared to the number of corrective action reports issued to other participants. Los Alamos had no open corrective action reports at the end of 1993.

The Los Alamos YMP, as characterized in this report, is performing satisfactory work for the Yucca Mountain Site Characterization Project. The total number of deficiencies issued during DOE and Los Alamos audit and survey activities are decreasing over time, which shows that Los Alamos personnel are satisfactorily meeting quality assurance requirements.

5.0 REFERENCES

Bolivar, S.L., 1992, Los Alamos National Laboratory Yucca Mountain Site Characterization Project 1991 Quality Program Status Report, Los Alamos National Laboratory Report LA-12344-MS, 113p.

Bolivar, S.L., 1994, Los Alamos National Laboratory Yucca Mountain Site Characterization Project 1992 Quality Program Status Report, Los Alamos National Laboratory Report LA-12703-SR, 126p.

Bolivar, S.L., and J.L. Day, 1993, The Quality Assurance Liaison: Combined Technical and Quality Assurance Support, 17th Annual Rocky Mountain Quality Conference Proceedings, Denver, CO., pp. 97-104.

Bolivar, S.L., and M. Finney, 1993, The Quality Connection (Jan. and Sept. issues).

Environmental Safety Services (M. Pope compiler), 1993, LANL Yucca Mountain Project Technical Reference Guide for the Babytrex Database Utilities, Preliminary Draft, 83p.

LATA, January 1994a (A. Anthony compiler), Orientation to the Los Alamos National Laboratory Yucca Mountain Site Characterization Project, Instructor's Guide (7 modules).

LATA, January 1994b (A. Anthony compiler), Orientation to the Los Alamos National Laboratory Yucca Mountain Site Characterization Project, Participant's Guide (7 modules plus attachments).

Reese, L. (Team Leader), 1993, Los Alamos National Laboratory Yucca Mountain Site Characterization Project Quality Assurance Management Assessment #93-07 (August 31, 1993), 6p.

U.S. Department of Energy Office of Civilian Radioactive Waste Management, 1993, Office of Quality Assurance Evaluation of OCRWM and Other Affected Organizations Quality Assurance Programs FY-1993, Informal Report dated 11-24-93, 27p.

ACKNOWLEDGMENTS

Special thanks to J. Atencio, S. Klein, M. Espinosa, and E. Martinez for help in preparation of this document. This work was supported by the Yucca Mountain Site Characterization Project as part of the Civilian Radioactive Waste Management Program. The YMP is managed by the U.S. Department of Energy, Yucca Mountain Site Characterization Project. This report is not governed by the QARD. It does not introduce any new data, only summarizes previous activities.

Appendix A

Q Team Charter

Q MEETING CHARTER

March 31, 1993

Attendees: The meeting is open to any Laboratory employee (including contractors) who works on the Yucca Mountain Site Characterization Project. Representatives of the following groups are considered charter members and normally will attend every meeting:

QPO Liaison
Verification
Records
Document Control
Management (QAPL)
Training
Site Research (QALs)
DR Coordinator
M&TE Coordinator
TCO Office
Software Quality Assurance

Meetings: Meetings are held on a quarterly basis (four per year) or as needed.

Format: The Quality Assurance Project Leader convenes and presides over the meetings. The agenda is determined by the members.

Purpose: Q meetings are held for the sole purpose of facilitating communication of YMP business. This includes identifying issues of importance to Los Alamos and contractor personnel resolving such issues when possible or notifying the proper personnel (such as management), and providing advisement and planning on such issues when appropriate. By the nature of the business conducted, these meetings provide stress relief and enhance team building.

Appendix B

Training Classes Provided in 1993

Table B-1. Formal training classes offered in 1993.

Class	Date	Attendees
Orientation	2-25-93	23
Records Management	9-14-93	10
Audit Training	2-93; 5-93; 7-93	8

Appendix C

Software Management Status Reports

Appendix C- Explanation

Following are five reports that summarize the status of the software development and certification effort through December, 1993. The SCR Status Accounting Report lists all of the Software Change Requests (SCRs) that have been received through the reporting month indicated in the title. It specifies all requests for development or certification that have been registered with the SCM organization. The SIR Status Accounting Report provides similar information regarding Software Incident Reports, or bug reports. The ECD Status Accounting Report lists the Engineering Change Directives (ECDs) that have been issued by the Configuration Control Board through the reporting month and indicate the associated SCRs and SIRs. The ECN Status accounting Report lists all Engineering Change Notices (ECNs) for software applications that have been approved for use through the reporting month. To apply one of these codes to activities governed by the QARD, it must be registered with the SCM Organization by submitting a Software/Data Dissemination Request (SDDR). The SDDR Status Accounting Report lists all software registrations to date.

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
1	Certification of DIFFRAC5000 Version 2.2	Steve Chipera	02/04/91	1
2	Certification of SHELXTL PLUS Version 4.11	Steve Chipera	02/04/91	2
3	Certification of VAX-PRD2/CDIF Version 1.04	Steve Chipera	02/04/91	3
4	Certification of PL Thermal MAIN PACKAGE 4.30	Steve Chipera	02/04/91	4
5	Conversion of Pre-existing Software TRACRN	Lynn Trease	02/04/91	5
6	Certification of VMS	David Cruze	02/04/91	6
7	Certification of INGRES (6.3)	David Cruze	02/04/91	7
8	Certification of INGRES/Windows 4GL (6.0)	David Cruze	02/04/91	8
9	Qualification of Minfile Version 3.88	Barbara Carlos	02/04/91	14
11	Qualification of DCS EM4105 Version 3.51-1.40	Barbara Carlos	02/04/91	16
12	Establish CCB Meeting Standards	David Cruze	02/08/91	0
13	Develop Standards for File Lists	Gary Cort	02/08/91	9
14	Develop FORTRAN Standards	Gary Cort	02/08/91	10
15	Qualify Unix Operating Systems	Donn Hines	02/08/91	11
16	Qualify NetCDF Software	Donn Hines	02/08/91	12
17	Develop Interface Table Utilities	Donn Hines	02/08/91	13
18	Qualification of Dionex AI-450 Version 2.1	Brent Newman	02/08/91	17
19	Qualification of IBM DOS 3.30 Operating System	Brent Newman	02/08/91	18
20	Qualification of Microsoft Windows Version 2.0	Brent Newman	02/08/91	19
21	Development and Certification of SORBEQ	Bruce Robinson	02/11/91	20
22	Certification of Existing Code FRACNET	Bruce Robinson	02/11/91	21
23	Certification of Existing Code FEHMN	Bruce Robinson	02/11/91	22
24	Develop A Generalized Plotting Routine	Zora Dash	02/19/91	23
25	Develop Interface Table I/O Handling Routines	Zora Dash	02/19/91	24
29	Certification of GEO-CALC PTA Version 1.0	Steve Chipera	02/14/91	29

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
30	Certification of GEO-CALC PTX Version 1.0	Steve Chipera	02/14/91	29
31	Certification of VACCELERATOR Version 3.10	Steve Chipera	02/14/91	30
32	Certification of GSAS (10-JAN-1991 distribution)	Steve Chipera	02/14/91	31
33	Certification of DPLOTF Version 060986	Steve Chipera	02/14/91	0
34	Certification of XRDPLT Version 870702	Steve Chipera	02/14/91	32
35	Certification of QUANT Version 5.2	Steve Chipera	02/14/91	33
36	Certification of SEDIT Version 900606	Steve Chipera	02/14/91	34
37	Certification of GRAPHINT Version 900813	Steve Chipera	02/14/91	35
38	Certification of GETSIEM Version 900717	Steve Chipera	02/14/91	36
39	Certification of SIEMPUT Version 900604	Steve Chipera	02/14/91	36
40	Certify Macintosh Operating System	Gary Cort	02/20/91	37
41	Certify HyperCard Application	Gary Cort	02/20/91	38
42	Certify Softool CCC Database	Gary Cort	02/20/91	39
43	Certify 4th Dimension	Gary Cort	02/20/91	40
44	Certify DISSPLA Version 11.0 Graphics Package	Zora Dash	02/19/91	25
45	Certification of RS/1 Version 4.3	Gary Luedemann	02/20/91	41
46	Certification of NCSA Image Version 2.0	Eric Nuttall	02/17/91	42
47	Certification of Existing Code CTCN	Eric Nuttall	02/27/91	43
48	Certification of Existing Code LSODPK	Eric Nuttall	02/27/91	44
49	Develop Standards for CCC Database Macro Language	Gary Cort	03/06/91	45
51	Certify Spyglass Software for the Macintosh	Lynn McDonald	03/14/91	47
53	Qualification of Microsoft C (Version 5.0)	Scott Carpenter	03/25/91	49
54	Qualification of Nucleus PCA-4000 (Version 880104)	Scott Carpenter	03/25/91	50
55	Qualification of Microsoft FORTRAN (Version 5.0)	Scott Carpenter	03/25/91	51
56	Qualification of Microsoft GW-BASIC (Ver 2.02,Release A2)	Scott Carpenter	03/25/91	52

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
57	Qualification of SIGMAPLOT (Version 4.0)	Scott Carpenter	03/25/91	53
65	Qualification of COBRA Control Software	Alan Mitchell	03/22/91	54
66	Qualification of Mathematica 386/7 (Version 1.2)	Ines Triay	03/22/91	55
67	Qualification of TMENU Backup Software	Ines Triay	03/22/91	56
68	Qualification of Microsoft Excel for Windows	Ines Triay	03/22/91	57
69	Qualification of Lotus 1-2-3 (Release 2.01 and 3.0)	Ines Triay	03/22/91	58
70	Qualification of Microsoft DOS (Version 3.3)	Ines Triay	03/22/91	59
71	Qualification of BI-2030 AT Control Software	Alan Mitchell	03/22/91	60
72	Qualification of Microsoft Quick BASIC (Version 3.0)	Alan Mitchell	03/22/91	61
73	Qualification of DM 3000F (Version 2.5) Control Software	Ines Triay	03/22/91	62
75	Qualification of Tri-Carb 2500TR Control Software	Alan Mitchell	03/22/91	64
78	Qualification of Noran Instrument's ADEM (3.0)	Peg Snow	04/09/91	65
79	Qualification of Noran Instrument's VISTA Software	Peg Snow	04/09/91	66
80	Develop ASCII-to-NetCDF Data Conversion Tool	Bruce Robinson	04/15/91	74
81	Qualification of SCALE.BAS	Gary Luedemann	04/16/91	80
82	Qualification of Rigaku's ESCP	Gary Luedemann	04/16/91	75
83	Qualification of Rigaku's DataFlex 360	Gary Luedemann	04/16/91	76
84	Qualification of Microsoft's QuickBASIC 4.5	Gary Luedemann	04/16/91	0
85	Programming Standards for QuickBASIC	David Morris	04/23/91	77
86	Instrument Control Software for PAS System	David Morris	05/02/91	81
87	Qualification of Cricket Graph Software	David Morris	05/02/91	82
88	Qualification of IGOR Software	David Morris	05/02/91	83
89	Qualification of IOTech/IEEE Controllers	David Morris	05/02/91	84
90	Qualification of Microsoft QuickBASIC	David Morris	05/02/91	85
91	Qualify Ultrix DEC Fortran and VMS Fortran Compilers	Donn Hines	05/23/91	86

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
92	Qualify Ultrix and VMS C Compilers	Donn Hines	05/23/91	87
93	Qualification of Sandia TASK8 Software	M.G. Snow	05/29/91	88
94	Qualification of Tracor Northern 'IDENT' software	M. G. Snow	05/29/91	89
95	Qualification of Tracor Northern 'SQ' Software	M. G. Snow	05/29/91	90
96	Qualification of PlanPerfect	Ines Triay	06/06/91	91
97	Programming Standards for ADA	Robert Kelsey	06/10/91	92
102	Certification of existing code GZSOLVE	Bruce Robinson	07/11/91	97
105	Qualification of Peakfit	Emerson Tongco	07/31/91	100
106	Qualify Meridian and Digital Ada Compilers	Robert Kelsey	08/02/91	102
107	CLAMS	Emerson Tongco	08/05/91	103
108	Qualification of "OS-9" Operating System	M. G. Snow	08/28/91	104
109	Qualification of "FLEX" Operating System	M. G. Snow	08/28/91	105
110	Qualification Excel for the Macintosh	David Broxton	08/30/91	106
111	Qualification of Versa Term-Pro	David Broxton	08/30/91	107
112	Qualification of KaleidaGraph	David Broxton	08/30/91	108
113	Structured Language Standards	Donn Hines	09/10/91	109
114	Shell Script Standards	Donn Hines	09/10/91	110
115	DCL Standards	Donn Hines	09/10/91	111
116	CSA Database Upgrade	Steve Donahue	10/03/91	115
117	Qualification of digiMatic	David Broxton	10/10/91	116
118	Project Schedule Update Mailer	Gary Cort	10/11/91	118
119	Ada Character String Utilities	Gary Cort	10/11/91	119
121	Documentation Generation Tool	Donn Hines	10/25/91	122
122	Certification of NierGas Application	Jane Poths	10/29/91	123
123	Ada Condition Notification Facility	Gary Cort	10/30/91	124
124	Qualification of Microsoft QuickBASIC Toolbox	Gary Luedemann	10/21/91	125

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
125	Qualification of SAS for SunX	Brent Newman	11/15/91	126
126	Upgrade the Computer Program Library	Steve Donahue	11/21/91	128
127	Qualification of K/Ar Control Software	Giday WoldeGabriel	11/27/91	129
128	Update Standards Documents	Steve Donahue	12/05/91	130
129	Certify Surface Display System for the IBM PC	Bruce Crowe	12/11/91	131
130	Certification of AXUM for the IBM PC	Bruce Crowe	12/11/91	132
131	Certification of SYSTAT for the IBM PC	Bruce Crowe	12/11/91	133
132	Standardize Build Filename Extensions	Steve Donahue	02/10/92	134
133	Certification of CENTX	Brent Newman	02/25/92	135
134	COHORT Software Package	Brent Newman	03/01/92	146
135	Certification of GEO PLUS	M. G. Snow	03/09/92	141
136	Certification of SXRAY/SUN	M. G. Snow	03/09/92	137
137	Certification of VISILOG	M. G. Snow	03/09/92	138
138	Certification of CIAP	M. G. Snow	03/09/92	139
139	Certification of FCIAP	M. G. Snow	03/09/92	140
140	Certification of SUN/TOPS	M. G. Snow	03/09/92	142
141	Certification of MAC/TOPS	M. G. Snow	03/09/92	143
142	Certification of IMIX	M. G. Snow	03/09/92	144
143	Certify Unix Operating System	Steve Donahue	03/12/92	147
144	Certify FORTRAN compilers	Steve Donahue	03/12/92	148
145	Standardize Make File Extensions	Steve Donahue	03/13/92	134
146	Certification of Tecplot for the Sun Workstation	Lynn McDonald	03/13/92	150
147	Certification of The Data Visualizer	Lynn McDonald	03/13/92	151
148	Certification of AVS Software	Lynn McDonald	03/13/92	152
149	BIO-RAD Software Package	Steve Chipera	03/12/92	155
150	COREL DRAW Version 2.01	Steve Chipera	03/12/92	156

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
151	Certification of Wildsoft Surveying System Software	Bruce Crowe	02/24/92	157
152	SPECTRALAB PC	Steve Chipera	03/12/92	158
153	Postsoft Version 1.0	Steve Chipera	03/12/92	159
154	PIZAZZ PLUS	Steve Chipera	04/02/92	160
155	LCLSQ	Steve Chipera	03/27/92	161
156	TGRAF	Steve Chipera	03/27/92	162
157	TABLECURVE	Steve Chipera	03/23/92	153
158	DIFFRACTINEL	Steve Chipera	03/23/92	154
159	Nanoscope III	Marilyn Hawley	04/09/92	163
160	Certification of Chaos	Bruce Crowe	04/09/92	164
161	Certification of Quattro Pro	Bruce Crowe	04/09/92	165
162	Certification of Non-Linear Forecasting	Bruce Crowe	04/09/92	166
163	Certification of MathCad	Bruce Crowe	04/09/92	167
164	Certification of IGPET	Bruce Crowe	04/09/92	168
165	Certification of Designer	Bruce Crowe	04/09/92	169
166	NLINISO.SAS	Brent Newman	04/28/92	166
167	PKZip Archive Utility	Brent Newman	07/14/92	170
168	Certification of Surfer	Bruce Crowe	09/30/92	173
169	XRFDRVOX	Gary Luedemann	11/13/92	174
170	Development of NONLIN_LSQ Application	Bruce Robinson	01/12/93	175
171	Certification of STATISTICA	Pamela Rogers	01/14/93	176
172	Update of QUANT	Steve Chipera	01/25/93	177
173	Certification of At Risk	Bruce Crowe	03/03/93	180
174	Certification of Crystal Ball for Windows	Bruce Crowe	03/03/93	181
175	Certification of Statistical Navigator	Bruce Crowe	03/03/93	182
176	Certification of PATASC	Steve Chipera	02/26/93	178

SCR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD
.177	Certification of SiemGetPut	Steve Chipera	02/26/93	179
178	Fox Pro	Richard Morley	03/17/93	183
179	Certify XRF-11	Emily Kluk	06/18/93	184
180	Certification of NEWMODF Application	Steve Chipera	07/01/93	185
181	Certification of dBase IV	Andrew Burningham	08/10/93	186

SIR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	SUBJECT	REQUESTOR	DATE	ECD No
1	Error in Fortran Standards (ECD-10)	Emerson Tongco	07/31/91	101
2	Error in Fortran Standards (ECD-10)	Robert Kelsey	07/31/91	101
3	FORTRAN STANDARDS	Emerson Tongco	08/06/91	101
4	INTERFACE_TABLES Design Problems	Donn Hines	11/15/91	127
5	Ada Condition Notification	Steve Donahue	02/19/92	149
6	Interface Tables Test Script Program	Steve Donahue	02/21/92	136
7	Interface Tables Test Script Program	Steve Donahue	02/21/92	136
8	Missing SDD for Interface Tables	Donn Hines	02/27/92	136
9	INTERFACE_TABLES Requirements	Donn Hines	03/06/92	136
11	MINFILE Calculator Error	Barbara Carlos	04/10/92	0
12	CDFTOOLS Application - Unicos Installation	Zora Dash	08/19/92	171

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
1	02/08/91	Certification of DIFFRAC5000 Version 2.2	Steve Chipera
2	02/08/91	Certification of SHELXTL Plus Version 4.11	Steve Chipera
3	02/08/91	Certification of VAX-PRD2/CDIF Version 1.04	Steve Chipera
4	02/08/91	Certification of PL Thermal MAIN PACKAGE 4.30	Steve Chipera
5	02/08/91	Conversion of Pre-existing Software TRACRN	Lynn Trease
6	02/08/91	Certification of VMS	David Cruze
7	02/08/91	Certification of INGRES (6.3)	David Cruze
8	02/08/91	Certification of INGRES/Windows 4GL (6.0)	David Cruze
9	02/08/91	Develop Standards for File Lists	Gary Cort
10	02/08/91	Develop FORTRAN Standards	Gary Cort
11	02/08/91	Qualify Unix Operating Systems	Donn Hines
12	02/08/91	Qualify NetCDF Software	Donn Hines
13	02/08/91	Develop Interface Table Utilities	Donn Hines
14	02/19/91	Qualification of Minfile Version 3.88	Barbara Carlos
16	02/19/91	Qualification of DCS EM4105 Version 3.51-1.40	Barbara Carlos
17	02/19/91	Qualification of Dionex AI-450 Version 2.1	Brent Newman
18	02/19/91	Qualification of IBM DOS 3.30 Operating System	Brent Newman
19	02/19/91	Qualification of Microsoft Windows Version 2.0	Brent Newman
20	02/19/91	Development and Certification of SORBEQ	Bruce Robinson
21	02/19/91	Certification of Existing Code FRACNET	Bruce Robinson
22	06/01/93	FEHMN Application	Zora Dash
23	03/04/91	Develop A Generalized Plot Routine	Zora Dash

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
24	03/04/91	Develop Interface Table I/O Handling Routines	Zora Dash
25	03/04/91	Certify DISSPLA Version 11.0 Graphics Package	Zora Dash
29	03/04/91	Certification of GEO-CALC PTA and PTX	Steve Chipera
30	03/04/91	Certification of VACCELERATOR Version 3.10	Steve Chipera
31	03/04/91	Certification of GSAS (10-JAN-1991 distribution)	Steve Chipera
33	03/04/91	Certification of QUANT Version 5.2	Steve Chipera
35	03/04/91	Certification of GRAPHINT Version 900813	Steve Chipera
36	03/04/91	Certification of GETSIEM and SIEMPUT	Steve Chipera
37	03/04/91	Certify Macintosh Operating System	Gary Cort
38	03/04/91	Certify HyperCard Application	Gary Cort
39	03/04/91	Certify Softool CCC Database	Gary Cort
40	03/04/91	Certify 4th Dimension Database	Gary Cort
41	03/04/91	Certification of RS/1 Version 4.3	Gary Luedemann
42	03/04/91	Certification of NCSA's Image Version 2.0	Eric Nuttall
43	03/04/91	Certification of Existing Code CTCN	Eric Nuttall
44	03/04/91	Certification of Existing Code LSODPK	Eric Nuttall
45	03/15/91	Develop Standards for CCC Database Macro Language	Gary Cort
47	04/02/91	Certify Spyglass Software for the Macintosh	Lynn McDonald
49	04/01/91	Qualification of Microsoft C (Version 5.0)	Scott Carpenter
50	04/01/91	Qualification of Nucleus PCA-4000 (Version 880104)	Scott Carpenter
51	04/01/91	Qualification of Microsoft FORTRAN (Version 5.0)	Scott Carpenter
52	04/01/91	Qualification of Microsoft GW-BASIC (Ver 2.02,Release A2)	Scott Carpenter

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
53	04/01/91	Qualification of SIGMAPLOT (Version 4.0)	Scott Carpenter
54	04/03/91	Qualification of COBRA Control System	Alan Mitchell
55	04/03/91	Qualification of Mathematica 386/7 (Version 1.2)	Ines Triay
56	04/03/91	Qualification of TMENU Backup Software	Ines Triay
57	04/03/91	Qualification of Microsoft Excel for Windows (Version 2.1C)	Ines Triay
58	04/03/91	Qualification of Lotus 1-2-3 (Release 2.01 and 3.0)	Ines Triay
59	04/03/91	Qualification of Microsoft DOS (Version 3.3)	Ines Triay
60	04/03/91	Qualification of BI-2030 AT Control Software	Alan Mitchell
61	04/03/91	Qualification of Microsoft Quick BASIC (Version 3.0)	Alan Mitchell
62	04/03/91	Qualification of DM 3000F (Version 2.5) Control Software	Alan Mitchell
64	04/03/91	Qualification of Tri-Carb 2500TR Control Software	Alan Mitchell
65	04/12/91	Qualification of Noran Instrument's ADEM (3.0)	Peg Snow
66	04/12/91	Qualification of Noran Instrument's VISTA Software	Peg Snow
74	04/15/91	Develop ASCII-to-NetCDF Data Conversion Tool	Bruce Robinson
75	04/22/91	Qualification of Rigaku's ESCP	Gary Luedemmann
76	04/22/91	Qualification of Rigaku's DataFlex 360	Gary Luedemann
77	04/23/91	Programming Standards for QuickBASIC	David Morris
81	06/10/91	Instrument Control Software for PAS System	David Morris
82	05/24/91	Qualification of Cricket Graph Software	David Morris
83	05/24/91	Qualification of IGOR Software	David Morris

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
84	05/24/91	Qualification of IOTech/IEEE Controllers	David Morris
85	05/24/91	Qualification of Microsoft QuickBASIC	David Morris
86	05/24/91	Qualify Ultrix DEC Fortran and VMS Fortran Compilers	Donn Hines
87	05/24/91	Qualify Ultrix and VMS C Compilers	Donn Hines
88	05/29/91	TASK8	M. G. Snow
89	05/29/91	IDENT	M. G. Snow
90	05/29/91	SQ	M. G. Snow
91	06/07/91	Qualification of PlanPerfect	Ines Triay
92	06/10/91	Programming Standards for ADA	Rob Kelsey
97	07/12/91	Qualification of GZSOLVE	George Zyvoloski
100	07/31/91	Qualification of PEAKFIT	Emerson Tongco
101	08/01/91	Fortran Standards	Steve Donahue
102	08/02/91	Ada Compilers	Robert Kelsey
103	08/06/91	CLAMS	Emerson Tongco
104	09/10/91	Qualification of OS-9 Operating System	M.G. Snow
105	09/10/91	Qualification of FLEX Operating System	M.G. Snow
106	09/10/91	Qualification of Excel for Macintosh	David Broxton
107	09/10/91	Qualification of VersaTerm Pro	David Broxton
108	09/10/91	Qualification of KaleidaGraph	David Broxton
109	09/10/91	Structured Language Standards	Donn Hines
110	09/10/91	Shell-Script Standards	Donn Hines
111	09/10/91	DCL Standards	Donn Hines
114	09/09/91	Qualification of Tri-Carb 2500TR Control Software	Alan Mitchell
112	09/09/91	Qualification of COBRA Control System	Alan Mitchell

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
113	09/09/91	Qualification of DM 3000F (Version 2.5) Control Software	Alan Mitchell
116	10/10/91	Qualification of digiMatic	David Broxton
117	10/08/91	Certification of LSODPK	Eric Nuttall
121	10/29/91	Qualify dBase IV for the IBM PC	Andrew Burningham
123	10/29/91	Certification of NierGas Application	Jane Poths
124	10/30/91	Ada Condition Notification Facility	Gary Cort
125	11/01/91	Microsoft QuickBASIC Toolbox	Gary Luedemann
127	11/15/91	Interface Tables Design Changes	Donn Hines
126	11/15/91	SAS for SunX	Brent Newman
129	11/27/91	K/Ar Measurement System	Giday WoldeGabriel
130	11/27/91	Update Standards Documents	Steve Donahue
131	12/17/91	Certification of Surface Display System	Bruce Crowe
132	12/17/91	Certification of AXUM	Bruce Crowe
133	12/17/91	Certification of SYSTAT	Bruce Crowe
134	02/27/92	Upgrade File List Standards	Steve Donahue
135	02/27/92	Certification of CENTX	Brent Newman
136	03/11/92	Interface Tables Application	Donn Hines
137	03/11/92	Certification of SXRAY/SUN	M. G. Snow
138	03/11/92	Certification of VISILOG	M. G. Snow
139	03/11/92	Certification of CIAP	M. G. Snow
140	03/11/92	Certification of FCIAP	M. G. Snow
141	03/11/92	Certification of GEO PLUS	M. G. Snow
142	03/11/92	Certification of SUN/TOPS	M. G. Snow
143	03/11/92	Certification of MAC/TOPS	M. G. Snow

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
144	03/11/92	Certification of IMIX	M. G. Snow
146	03/13/92	Certify COHORT Software Package	Brent Newman
147	03/12/92	Certify Additional Unix Operating Systems	Steve Donahue
148	03/12/92	Certify Additional FORTRAN Compilers	Steve Donahue
149	03/13/92	Ada Condition Notification Bug Fix	Gary Cort
150	03/13/92	Certify Tecplot	Lynn McDonald
151	03/13/92	Certify The Data Visualizer	Lynn McDonald
152	03/13/92	Certify AVS Software	Lynn McDonald
153	03/24/92	Certification of TABLECURVE	Steve Chipera
154	03/24/92	Certification of DIFFRACTINEL	Steve Chipera
155	03/25/92	Certify BIO-RAD Software	S. Chipera
156	03/25/92	Certify COREL DRAW	Steve Chipera
157	03/25/92	Certify Wildsoft Surveying System	Bruce Crowe
158	03/25/92	Certify SPECTRALAB PC	Steve Chipera
159	03/25/92	Certify Postsoft	Steve Chipera
160	04/08/92	Certify PIZAZZ PLUS	Steve Chipera
161	04/08/92	Certify LCLSQ	Steve Chipera
162	04/08/92	Certify TGRAF	Steve Chipera
163	04/10/92	Certify Nanoscope III	Marilyn Hawley
164	04/15/92	Certify Chaos	Bruce Crowe
165	04/15/92	Certify Quattro Pro	Bruce Crowe
166	04/15/92	Certify Non-Linear Forecasting	Bruce Crowe
167	04/15/92	Certify MathCad	Bruce Crowe
168	04/15/92	Certify IGPET	Bruce Crowe

ECD STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	SUBJECT	DEVELOPER
169	04/15/92	Certify Designer	Bruce Crowe
170	07/30/92	Certify PKZip	Brent Newman
171	08/20/92	CDFTOOLS Application	Zora Dash
172	08/31/92	NLINISO.SAS	Brent Newman
173	10/13/92	Certify Surfer	Bruce Crowe
174	11/30/92	Certify XRFDRVOX	Gary Luedemann
175	01/21/93	Certify NONLIN_LSQ	Bruce Robinson
176	01/25/93	Certify STATISTICA	Pamela Rogers
177	02/01/93	Update of QUANT	Steve Chipera
180	03/11/93	Certify At Risk	Bruce Crowe
181	03/11/93	Certify Crystal Ball for Windows	Bruce Crowe
182	03/11/93	Certify Statistical Navigator	Bruce Crowe
178	03/11/93	Certify PATASC	Steve Chipera
179	03/11/93	Certify SiemGetPut	Steve Chipera
183	03/17/93	Certify Fox Pro	Richard Morley
184	06/22/93	Certify XRF-11	Emily Kluk
185	07/06/93	Certify NEWMODF	Steve Chipera
186	08/27/93	Certify dBase IV	Andrew Burningham

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
1	04/15/91	FORTRAN_STD-01-00-00	10
2	05/03/91	CCC_STD-01-00-00	45
3	05/03/91	MAC_OS-01-00-00	37
4	05/03/91	CCC_DATABASE-01-00-00	39
5	05/03/91	4D_DATABASE-01-00-00	40
6	05/24/91	INGRES_4GL-01-00-00	8
7	05/24/91	UNIX-01-00-00	11
8	05/24/91	NETCDF-01-00-00	12
9	05/24/91	DISSPLA-01-00-00	25
10	06/05/91	FILELIST_STD-01-00-00	9
11	06/14/91	VAX_VMS-01-00-00	6
12	06/14/91	INGRES_RDBMS-01-00-00	7
13	06/26/91	DOS-01-00-00	18
14	06/26/91	DIFFRAC5000-01-00-00	1
15	06/26/91	SHELXTL-01-00-00	2
16	06/26/91	GSAS-01-00-00	31
17	06/26/91	VACCELERATOR-01-00-00	30
18	06/26/91	VAX_PDF2_CDIF-01-00-00	3
19	06/28/91	FORTRAN_COMPILERS-01-00-00	86
20	06/28/91	C_COMPILERS-01-00-00	87
22	08/12/91	ADEM-01-00-00	65
23	08/13/91	Spyglass-01-00-00	47
24	08/13/91	PL-THERMAL-01-00-00	4
25	08/22/91	GEO-CALC_PTA/PTX-01-00-00	29
26	09/11/91	SQ-01-00-00	90

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
27	09/11/91	TASK8-01-00-00	88
28	09/11/91	IDENT-01-00-00	89
29	09/12/91	OS9-01-00-00	104
30	09/12/91	FLEX-01-00-00	105
31	09/13/91	VISTA-01-00-00	66
32	09/17/91	ADA_STD-01-00-00	92
33	09/16/91	NCSA_IMAGE-01-00-00	42
34	10/03/91	TRI-CARB_2500TR-01-00-00	64
35	10/18/91	LOTUS_123-01-00-00	58
36	10/18/91	PLANPERFECT-01-00-00	91
37	10/18/91	COBRA-01-00-00	54
38	10/18/91	STRUCTURED_LANGUAGE_STD-01-00-00	109
39	10/18/91	SHELL_SCRIPT_STD-01-00-00	110
40	10/18/91	DCL_STD-01-00-00	111
41	11/13/91	MINFILE-01-00-00	14
42	11/13/91	MS_FORTRAN-01-00-00	51
43	12/03/91	SIEMGETPUT-01-00-00	36
44	12/09/91	DIONEX_AI450-01-00-00	17
45	12/06/91	K_AR-01-00-00	129
46	12/09/91	VERSATERM-01-00-00	107
47	12/09/91	TMENU-01-00-00	56
48	12/09/91	MS_DOS-01-00-000	59
49	12/09/91	DIGIMATIC-01-00-00	116
50	12/09/91	MS_C-01-00-00	49
51	01/03/92	MS_WINDOWS-01-00-00	19

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
52	01/09/92	EXCEL_MAC-01-00-00	106
53	01/09/92	KALEIDAGRAPH-01-00-00	108
54	01/31/92	EM4105-01-00-00	16
55	01/16/92	ADA_COMPILERS-01-00-00	102
56	01/16/92	INTERFACE_TABLES-01-00-00	13
57	01/27/92	MICROSOFT_BASIC-01-00-00	52
58	01/27/92	SIGMAPLOT_01-00-00	53
59	01/27/92	PCA_4000-01-00-00	50
60	02/03/92	AXUM-01-00-00	132
61	02/03/92	SYSTAT-01-00-00	133
62	02/03/92	SURFACE_DISPLAY_SYSTEM-01-00-00	131
63	02/19/92	ESCP-01-00-00	75
64	02/19/92	RS/1-01-00-00	41
65	02/20/92	DATAFLEX_360-01-00-00	76
66	02/20/92	ADA_CONDITION-01-00-00	124
67	02/26/92	GRAPHINT-01-00-00	35
68	03/11/92	LSODPK-01-00-00	117
69	03/13/92	GEO-PLUS-01-00-00	141
70	03/13/92	SXRAY_SUN-01-00-00	137
71	03/13/92	VISILOG-01-00-00	138
72	03/13/92	CIAP-01-00-00	139
73	03/13/92	FCIAP-01-00-00	140
74	03/13/92	SUN_TOPS-01-00-00	142
75	03/13/92	MAC_TOPS-01-00-00	143
76	03/13/92	IMIX-01-00-00	144

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
77	03/13/92	COHORT-01-00-00	146
78	03/12/92	SAS_FOR_SUNX-01-00-00	126
79	03/13/92	UNIX-01-00-01	147
80	03/13/92	FORTRAN_COMPILERS-01-00-01	148
81	03/13/92	TECPLOT-01-00-00	150
82	03/13/92	DATA_VISUALIZER-01-00-00	151
83	03/13/92	AVS-01-00-00	152
84	03/27/92	TABLECURVE-01-00-00	153
85	03/27/92	DIFFRACTINEL-01-00-00	154
86	03/27/92	BIO-RAD-01-00-00	155
87	03/27/92	COREL_DRAW-01-00-00	156
88	03/27/92	WILDSOFT-01-00-00	157
89	03/27/92	SPECTRALAB_PC-01-00-00	158
90	03/27/92	POSTSOFT-01-00-00	159
91	03/25/92	MS_QUICKBASIC-01-00-00	61
92	03/27/92	BI-2030_AT-01-00-00	60
93	03/30/92	PEAKFIT-01-00-00	100
94	03/30/92	DM3000F-01-00-00	62
95	03/30/92	WINDOWS_EXCEL-01-00-00	57
96	03/30/92	HYPERCARD-01-00-00	38
97	04/03/92	MATHEMATICA-01-00-00	55
98	04/03/92	CLAMS-01-00-00	103
99	04/10/92	PIZAZZ_PLUS-01-00-00	160
100	04/10/92	LCLSQ-01-00-00	161
101	04/10/92	TGRAF-01-00-00	162
102	04/10/92	NANOSCOPE-01-00-00	163

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
103	04/17/92	CHAOS-01-00-00	164
104	04/17/92	QUATTRO_PRO-01-00-00	165
105	04/17/92	NON_LINEAR-01-00-00	166
106	04/17/92	MATHCAD-01-00-00	167
107	04/17/92	IGPET-01-00-00	168
108	04/17/92	DESIGNER-01-00-00	169
109	04/28/92	ADA_CONDITION-01-00-01	149
110	05/05/92	CDFTOOLS-01-00-00	24
111	07/30/92	PKZIP-01-00-00	170
112	08/28/92	INTERFACE_TABLES-01-00-01	136
113	10/13/92	SURFER-01-00-00	173
114	10/08/92	QUANT-01-00-00	33
116	11/24/92	GENPLOT-01-00-00	23
115	11/25/92	CDFTOOLS-01-00-01	171
117	01/29/93	STATISTICA-01-00-00	176
118	02/12/93	SORBEQ-01-00-00#	20
119	03/11/93	AT_RISK-01-00-00	180
120	03/11/93	CRYSTAL_BALL_WINDOWS-01-00-00	181
121	03/11/93	STATISTICAL_NAVIGATOR-01-00-00	182
122	03/17/93	FOX_PRO-01-00-00	183
123	03/23/93	QUICKBASIC_STDS-01-00-00	77
124	03/24/93	TRACRN-01-00-00 Probationary Release	5
125	05/05/93	PATASC-01-00-00	178
126	06/22/93	XRF-11-01-00-00	184

ECN STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	DATE	RELEASE LABEL	REF ECD
127	07/06/93	NEWMODF-01-00-00	185
128	8/27/93	dBASE_IV-01-00-00	186

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
1	FORTRAN_STD-01-00-00	David Morris	04/23/91
2	CCC_STD-01-00-00	Gary Cort	06/25/91
3	MAC_OS-01-00-00	Gary Cort	06/25/91
4	CCC_DATABASE-01-00-00	Gary Cort	06/25/91
5	4D_DATABASE-01-00-00	Gary Cort	06/25/91
6	INGRES_4GL-01-00-00	Gary Cort	06/25/91
7	UNIX-01-00-00	Gary Cort	06/25/91
8	NETCDF-01-00-00	Gary Cort	06/25/91
9	VAX_VMS-01-00-00	Gary Cort	06/25/91
10	INGRES_RDBMS-01-00-00	Gary Cort	06/25/91
11	FORTRAN_STD-01-00-00	Bruce Crowe	07/01/91
15	FORTRAN_STD-01-00-00	Robert Loux	07/01/91
18	FORTRAN_STD-01-00-00	Joey Gorman	07/01/91
19	FORTRAN_STD-01-00-00	Richard Morley	07/01/91
20	FORTRAN_STD-01-00-00	Dr. Heino Nitsche	07/01/91
21	FORTRAN_STD-01-00-00	Ross Oblad	07/01/91
24	FORTRAN_STD-01-00-00	David Bish	07/01/91
27	FORTRAN_STD-01-00-00	Katherine Campbell	07/01/91
30	FORTRAN_STD-01-00-00	Gary Cort	07/01/91
32	FILELIST_STD-01-00-00	Bruce Crowe	07/01/91
36	FILELIST_STD-01-00-00	Robert Loux	07/01/91
39	FILELIST_STD-01-00-00	Joey Gorman	07/01/91
40	FILELIST_STD-01-00-00	Richard Morley	07/01/91
41	FILELIST_STD-01-00-00	Dr. Heino Nitsche	07/01/91

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
42	FILELIST_STD-01-00-00	Ross Oblad	07/01/91
45	FILELIST_STD-01-00-00	David Bish	07/01/91
48	FILELIST_STD-01-00-00	Katherine Campbell	07/01/91
51	FILELIST_STD-01-00-00	Gary Cort	07/01/91
55	FORTRAN_STD-01-00-00	Inez Triay	08/01/91
57	FORTRAN_STD-01-00-00	Bruce Robinson	08/01/91
61	FORTRAN_STD-01-00-00	Arend Meijer	08/01/91
64	FORTRAN_STD-01-00-00	Carol LaDelfe	08/01/91
66	FORTRAN_STD-01-00-00	Donn Hines	08/01/91
71	FILELIST_STD-01-00-00	Inez Triay	08/01/91
73	FILELIST_STD-01-00-00	Bruce Robinson	08/01/91
77	FILELIST_STD-01-00-00	Arend Meijer	08/01/91
80	FILELIST_STD-01-00-00	Carol LaDelfe	08/01/91
82	FILELIST_STD-01-00-00	Donn Hines	08/01/91
86	FILELIST_STD-01-00-00	Steve Donahue	08/01/91
87	FORTRAN_STD-01-00-00	Steve Donahue	08/01/91
88	C_COMPILERS-01-00-00	David Broxton	08/01/91
89	FORTRAN_COMPILERS-01-00-00	David Broxton	08/01/91
90	DOS-01-00-00	David Broxton	08/01/91
91	VAX_VMX-01-00-00	David Broxton	08/01/91
92	DISSPLA-01-00-00	David Broxton	08/01/91
93	MAC_OS-01-00-00	David Broxton	08/01/91
94	VAX_PDF2_CDIF-01-00-00	David Bish	08/13/91
95	VAX_PDF2_CDIF-01-00-00	Steve Chipera	08/13/91
96	VACCELERATOR-01-00-00	David Bish	08/13/91
97	VACCELERATOR-01-00-00	Steve Chipera	08/13/91

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
98	GSAS-01-00-00	David Bish	08/13/91
99	GSAS-01-00-00	Steve Chipera	08/13/91
100	SHELXTL-01-00-00	David Bish	08/13/91
101	SHELXTL-01-00-00	Steve Chipera	08/13/91
102	DIFFRAC 5000-01-00-00	David Bish	08/13/91
103	DIFFRAC 5000-01-00-00	Steve Chipera	08/13/91
104	CCC_STD-01-00-00	Gary Cort	09/11/91
105	FLEX-01-00-00	M. G. Snow	09/12/91
106	IDENT-01-00-00	M. G. Snow	09/12/91
107	OS9-01-00-00	M. G. Snow	09/12/91
108	SQ-01-00-00	M. G. Snow	09/12/91
109	TASK8-01-00-00	M. G. Snow	09/12/91
110	VISTA-01-00-00	M. G. Snow	09/13/91
111	FLEX-01-00-00	David Broxton	09/13/91
112	IDENT-01-00-00	David Broxton	09/13/91
113	OS9-01-00-00	David Broxton	09/13/91
114	SQ-01-00-00	David Broxton	09/13/91
115	TASK8-01-00-00	David Broxton	09/13/91
116	VISTA-01-00-00	David Broxton	09/13/91
117	CCC_STD-01-00-00	Steve Donahue	09/17/91
118	ADEM-01-00-00	Peg Snow	08/29/91
119	GEO-CALC_PTA/PTX-01-00-00	Steve Chipera	09/17/91
120	GEO-CALC_PTA/PTX-01-00-00	David Bish	09/17/91
121	PL-THERMAL-01-00-00	David Bish	09/17/91
122	PL-THERMAL-01-00-00	Steve Chipera	09/17/91
123	VISTA-01-00-00	Barbara Carlos	10/10/91

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
124	TASK8-01-00-00	Barbara Carlos	10/10/91
125	SQ-01-00-00	Barbara Carlos	10/10/91
126	IDENT-01-00-00	Barbara Carlos	10/10/91
127	ADEM-01-00-00	Barbara Carlos	10/10/91
128	OS9-01-00-00	Barbara Carlos	10/10/91
129	FLEX-01-00-00	Barbara Carlos	10/10/91
130	DIFFRAC5000-01-00-00	Giday Woldegabriel	10/11/91
131	VAX_PDF2_CDIF-01-00-00	Giday Woldegabriel	10/11/91
132	VISTA-01-00-00	Giday Woldegabriel	10/11/91
133	ADEM-01-00-00	Giday Woldegabriel	10/11/91
134	SQ-01-00-00	Giday Woldegabriel	10/11/91
135	TASK8-01-00-00	Giday Woldegabriel	10/11/91
136	IDENT-01-00-00	Giday Woldegabriel	10/11/91
137	OS9-01-00-00	Giday Woldegabriel	10/11/91
138	FLEX-01-00-00	Giday Woldegabriel	10/11/91
139	VISTA-01-00-00	Sandra Craven	10/11/91
140	TASK8-01-00-00	Sandra Craven	10/11/91
141	SQ-01-00-00	Sandra Craven	10/11/91
142	IDENT-01-00-00	Sandra Craven	10/11/91
143	ADEM-01-00-00	Sandra Craven	10/11/91
144	OS9-01-00-00	Sandra Craven	10/11/91
145	FLEX-01-00-00	Sandra Craven	10/11/91
146	FLEX-01-00-00	David T. Vaniman	10/17/91
147	OS9-01-00-00	David T. Vaniman	10/17/91
148	IDENT-01-00-00	David T. Vaniman	10/17/91
149	ADEM-01-00-00	David T. Vaniman	10/17/91

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
150	SQ-01-00-00	David T. Vaniman	10/17/91
151	TASK8-01-00-00	David T. Vaniman	10/17/91
152	VISTA-01-00-00	David T. Vaniman	10/17/91
153	ADA_STD-01-00-00	Gary Cort	10/17/91
154	ADA_STD-01-00-00	Will Dearholt	10/23/91
155	MS_FORTRAN-01-00-00	Scott A. Carpenter	08/28/91
156	DOS-01-00-00	Brent Newman	11/20/91
157	DOS-01-00-00	Mike Ebinger	11/20/91
158	DIONEX_AI450-01-00-00	Mike Ebinger	11/20/91
159	MS_WINDOWS-01-00-00	Mike Ebinger	11/20/91
161	MS_WINDOWS-01-00-00	Brent Newman	11/20/91
162	MS_C-01-00-00	Scott A. Carpenter	11/20/91
163	LOTUS_1-2-3-01-00-00	Pamela Rogers	11/20/91
164	PCA_4000-01-00-00	Scott A. Carpenter	11/20/91
165	MICROSOFT_BASIC-01-00-00	Scott A. Carpenter	11/20/91
166	SIGMAPLOT_01-00-00	Scott A. Carpenter	11/20/91
167	RS/1-01-00-00	Giday Woldegabriel	11/20/91
168	RS/1 -01-00-00	Gary Luedemann	11/20/91
169	DATAFLEX_360-01-00-00	Gary Luedemann	11/20/91
170	ESCP-01-00-00	Gary Luedemann	11/20/91
171	FILELIST_STD-01-00-00	Marian Schimicci	11/22/91
172	ADA_STD-01-00-00	Zora Dash	12/03/91
173	DISSPLA-01-00-00	Bruce Robinson	12/03/91
174	UNIX-01-00-00	Bruce Robinson	12/03/91
175	NETCDF-01-00-00	Bruce Robinson	12/03/91
176	FORTRAN_COMPILERS-01-00-00	Bruce Robinson	12/03/91

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
177	Ada_STD-01-00-00	Donn Hines	12/03/91
178	DCL_STD-01-00-00	Donn Hines	12/04/91
179	SHELL_SCRIPT_STD-01-00-00	Donn Hines	12/04/91
180	STRUCTURED_LANGUAGE_STD-01-00-00	Donn Hines	12/04/91
181	CCC_STD-01-00-00	Donn Hines	12/04/91
182	DIONEX_AI450-01-00-00	Brent Newman	12/16/91
183	FORTRAN_STD-01-00-00	Steve Chipera	12/10/91
184	DCL_STD-01-00-00	Steve Chipera	12/10/91
185	FILELIST_STD-01-00-00	Steve Chipera	12/10/91
186	MS_DOS-01-00-00	Scott A. Carpenter	01/03/92
187	KALEIDAGRAPH-01-00-00	David Broxton	01/10/92
188	VERSATERM-01-00-00	David Broxton	01/10/92
189	EXCEL_MAC-01-00-00	David Broxton	01/10/92
190	DIGIMATIC-01-00-00	David Broxton	01/10/92
191	INTERFACE_TABLES-01-00-00	.Bruce Robinson	01/31/92
192	ADA_CONDITION-01-00-00	Gary Cort	02/26/92
193	MS_FORTRAN-01-00-00	Brent Newman	02/25/92
194	DCL_STD-01-00-00	Steve Donahue	03/05/92
195	FORTRAN_STD-01-00-00	Kenneth Eggert	03/09/92
196	MAC_OS-01-00-00	Kenneth Eggert	03/09/92
197	UNIX-01-00-00	Kenneth Eggert	03/09/92
198	FILELIST_STD-01-00-00	Kenneth Eggert	03/09/92
199	FORTRAN_COMPILERS-01-00-00	Kenneth Eggert	03/09/92
200	Spyglass-01-00-00	Kenneth Eggert	03/09/92
201	NCSA_IMAGE-01-00-00	Kenneth Eggert	03/09/92
202	VERSATERM-01-00-00	Kenneth Eggert	03/09/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
203	EXCEL_MAC-01-00-00	Kenneth Eggert	03/09/92
204	KALEIDAGRAPH-01-00-00	Kenneth Eggert	03/09/92
205	VAX_VMS-01-00-00	Steve Chipera	03/13/92
206	DOS-01-00-00	Steve Chipera	03/13/92
207	MS_DOS-01-00-00	Steve Chipera	03/13/92
208	MS_WINDOWS-01-00-00	Steve Chipera	03/13/92
209	MAC_OS-01-00-00	Steve Chipera	03/13/92
210	MINFILE-01-00-00	Steve Chipera	03/13/92
211	EM4105-01-00-00	Steve Chipera	03/13/92
212	DISSPLA-01-00-00	Steve Chipera	03/13/92
213	VERSATERM-01-00-00	Steve Chipera	03/13/92
214	GRAPHINT-01-00-00	Steve Chipera	03/13/92
215	SIEMGETPUT-01-00-00	Steve Chipera	03/13/92
216	FORTRAN_COMPILERS-01-00-00	Steve Chipera	03/13/92
217	INTERFACE_TABLES-01-00-00	Steve Chipera	03/13/92
218	NETCDF-01-00-00	Steve Chipera	03/13/92
219	RS/1-01-00-00	Steve Chipera	03/13/92
220	VAX_VMS-01-00-00	David Bish	03/13/92
221	DOS-01-00-00	David Bish	03/13/92
222	MS_DOS-01-00-00	David Bish	03/13/92
223	MS_WINDOWS-01-00-00	David Bish	03/13/92
224	MAC_OS-01-00-00	David Bish	03/13/92
225	MINFILE-01-00-00	David Bish	03/13/92
226	EM4105-01-00-00	David Bish	03/13/92
227	DISSPLA-01-00-00	David Bish	03/13/92
228	VERSATERM-01-00-00	David Bish	03/13/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
229	GRAPHINT-01-00-00	David Bish	03/13/92
230	SIEMGETPUT-01-00-00	David Bish	03/13/92
231	FORTRAN_COMPILERS-01-00-00	David Bish	03/13/92
232	INTERFACE_TABLES-01-00-00	David Bish	03/13/92
233	NETCDF-01-00-00	David Bish	03/13/92
234	RS/1-01-00-00	David Bish	03/13/92
235	TECPLOT-01-00-00	Kenneth Eggert	03/13/92
236	DATA_VISUALIZER-01-00-00	Kenneth Eggert	03/13/92
237	AVS-01-00-00	Kenneth Eggert	03/13/92
238	Excel-Windows-01-00-00	Mike Murrell	03/16/92
239	SIGMAPLOT-01-00-00	Mike Murrell	03/16/92
240	MS_WINDOWS-01-00-00	Mike Murrell	03/16/92
241	MS_DOS-01-00-00	Mike Murrell	03/16/92
242	COHORT-01-00-00	Brent Newman	03/13/92
243	MS_WINDOWS-01-00-00	Martin A. Ott	03/16/92
244	WINDOWS_EXCEL-01-00-00	Martin A. Ott	03/16/92
245	MS_DOS-01-00-00	Martin A. Ott	03/16/92
246	TRI-CARB_2500TR-01-00-00	Martin A. Ott	03/16/92
247	MS_WINDOWS-01-00-00	Alan J. Mitchell	03/16/92
248	COBRA-01-00-00	Alan J. Mitchell	03/16/92
249	TMENU-01-00-00	Alan J. Mitchell	03/16/92
250	WINDOWS_EXCEL-01-00-00	Alan J. Mitchell	03/16/92
251	LOTUS_123-01-00-00	Alan J. Mitchell	03/16/92
252	MS_DOS-01-00-00	Alan J. Mitchell	03/16/92
253	TRI-CARB_2500TR-01-00-00	Alan J. Mitchell	03/16/92
254	BI_2030_AT-01-00-00	Alan J. Mitchell	03/16/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
255	DM3000F-01-00-00	Alan J. Mitchell	03/16/92
256	MS_WINDOWS-01-00-00	Ines R. Triay	03/16/92
257	MAC_OS-01-00-00	Ines R. Triay	03/16/92
258	COBRA-01-00-00	Ines R. Triay	03/16/92
259	TMENU-01-00-00	Ines R. Triay	03/16/92
260	LOTUS_123-01-00-00	Ines R. Triay	03/16/92
261	MS_DOS-01-00-00	Ines R. Triay	03/16/92
262	HYPERCARD-01-00-00	Ines R. Triay	03/16/92
263	MATHEMATICA-01-00-00	Ines R. Triay	03/16/92
264	WINDOWS_EXCEL-01-00-00	Ines R. Triay	03/16/92
265	BI-2030_AT-01-00-00	Ines R. Triay	03/16/92
266	QUICK_BASIC-01-00-00	Ines R. Triay	03/16/92
267	DM3000F-01-00-00	Ines R. Triay	03/16/92
268	TRI-CARB_2500TR-01-00-00	Ines R. Triay	03/16/92
269	PEAKFIT-01-00-00	Ines R. Triay	03/16/92
270	CLAMS-01-00-00	Ines R. Triay	03/16/92
271	EXCEL_MAC-01-00-00	Ines R. Triay	03/16/92
272	VERSATERM-01-00-00	Ines R. Triay	03/16/92
273	MS_WINDOWS-01-00-00	Connie M. Overly	04/18/92
274	MAC_OS-01-00-00	Connie M. Overly	04/18/92
275	COBRA-01-00-00	Connie M. Overly	04/18/92
276	TMENU-01-00-00	Connie M. Overly	04/18/92
277	LOTUS_123-01-00-00	Connie M. Overly	04/18/92
278	MS_DOS-01-00-00	Connie M. Overly	04/18/92
279	HYPERCARD-01-00-00	Connie M. Overly	04/18/92
280	MATHEMATICA-01-00-00	Connie M. Overly	04/18/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
281	WINDOWS_EXCEL-01-00-00	Connie M. Overly	04/18/92
282	BI_2030AT-01-00-00	Connie M. Overly	04/18/92
283	QUICK_BASIC-01-00-00	Connie M. Overly	04/18/92
284	DM3000F-01-00-00	Connie M. Overly	04/18/92
285	TRI-CARB_2500TR-01-00-00	Connie M. Overly	04/18/92
286	PEAKFIT-01-00-00	Connie M. Overly	04/18/92
287	CLAMS-01-00-00	Connie M. Overly	04/18/92
288	EXCEL_MAC-01-00-00	Connie M. Overly	04/18/92
289	VERSATERM-01-00-00	Connie M. Overly	04/18/92
290	SAS_FOR_SUNX-01-00-00	Brent Newman	03/19/92
291	FORTRAN_COMPILERS-01-00-00	Gary Cort	03/24/92
292	ADEM-01-00-00	Robert Raymond	03/27/92
293	SQ-01-00-00	Robert Raymond	03/27/92
294	TASK8-01-00-00	Robert Raymond	03/27/92
295	IDENT-01-00-00	Robert Raymond	03/27/92
296	OS9-01-00-00	Robert Raymond	03/27/92
297	FLEX-01-00-00	Robert Raymond	03/27/92
298	VISTA-01-00-00	Robert Raymond	03/27/92
299	VERSATERM-01-00-00	Robert Raymond	03/27/92
300	EXCEL_MAC-01-00-00	Robert Raymond	03/27/92
301	KALEIDAGRAPH-01-00-00	Robert Raymond	03/27/92
302	RS/1-01-00-00	Robert Raymond	03/27/92
303	GEO-PLUS-01-00-00	Robert Raymond	03/27/92
304	SXRAY-01-00-00	Robert Raymond	03/27/92
305	VISILOG-01-00-00	Robert Raymond	03/27/92
306	CIAP-01-00-00	Robert Raymond	03/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
307	FCIAP-01-00-00	Robert Raymond	03/27/92
308	SUN_TOPS-01-00-00	Robert Raymond	03/27/92
309	MAC_TOPS-01-00-00	Robert Raymond	03/27/92
310	IMIX-01-00-00	Robert Raymond	03/27/92
311	UNIX-01-00-00	Robert Raymond	03/27/92
312	DATAFLEX_360-01-00-00	Robert Raymond	03/27/92
313	ESCP-01-00-00	Robert Raymond	03/27/92
314	ADEM-01-00-00	Gary Luedemann	03/27/92
315	SQ-01-00-00	Gary Luedemann	03/27/92
316	TASK8-01-00-00	Gary Luedemann	03/27/92
317	IDENT-01-00-00	Gary Luedemann	03/27/92
318	OS9-01-00-00	Gary Luedemann	03/27/92
319	FLEX-01-00-00	Gary Luedemann	03/27/92
320	VISTA-01-00-00	Gary Luedemann	03/27/92
321	VERSATERM-01-00-00	M.G. Snow	03/27/92
322	EXCEL_MAC-01-00-00	M.G. Snow	03/27/92
323	KALEIDAGRAPH-01-00-00	M.G. Snow	03/27/92
324	RS/1-01-00-00	M.G. Snow	03/27/92
325	GEO-PLUS-01-00-00	M.G. Snow	03/27/92
326	SXRAY-01-00-00	M.G. Snow	03/27/92
327	VISILOG-01-00-00	M.G. Snow	03/27/92
328	CIAP-01-00-00	M.G. Snow	03/27/92
329	FCIAP-01-00-00	M.G. Snow	03/27/92
330	SUN_TOPS-01-00-00	M.G. Snow	03/27/92
331	MAC_TOPS-01-00-00	M.G. Snow	03/27/92
332	IMIX-01-00-00	M.G. Snow	03/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
333	UNIX-01-00-00	M.G. Snow	03/27/92
334	DATAFLEX_360-01-00-00	M.G. Snow	03/27/92
335	ESCP-01-00-00	M.G. Snow	03/27/92
336	VERSATERM-01-00-00	Gary Luedemann	03/27/92
337	EXCEL_MAC-01-00-00	Gary Luedemann	03/27/92
338	KALEIDAGRAPH-01-00-00	Gary Luedemann	03/27/92
339	GEO-PLUS-01-00-00	Gary Luedemann	03/27/92
340	SXRAY-01-00-00	Gary Luedemann	03/27/92
341	VISILOG-01-00-00	Gary Luedemann	03/27/92
342	CIAP-01-00-00	Gary Luedemann	03/27/92
343	FCIAP-01-00-00	Gary Luedemann	03/27/92
344	SUN_TOPS-01-00-00	Gary Luedemann	03/27/92
345	MAC_TOPS-01-00-00	Gary Luedemann	03/27/92
346	IMIX-01-00-00	Gary Luedemann	03/27/92
347	UNIX-01-00-00	Gary Luedemann	03/27/92
348	ADEM-01-00-00	George Guthrie	03/27/92
349	SQ-01-00-00	George Guthrie	03/27/92
350	TASK8-01-00-00	George Guthrie	03/27/92
351	IDENT-01-00-00	George Guthrie	03/27/92
352	OS9-01-00-00	George Guthrie	03/27/92
353	FLEX-01-00-00	George Guthrie	03/27/92
354	VISTA-01-00-00	George Guthrie	03/27/92
355	VERSATERM-01-00-00	George Guthrie	03/27/92
356	EXCEL_MAC-01-00-00	George Guthrie	03/27/92
357	KALEIDAGRAPH-01-00-00	George Guthrie	03/27/92
358	RS/1-01-00-00	George Guthrie	03/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
359	GEO-PLUS-01-00-00	George Guthrie	03/27/92
360	SXRAY-01-00-00	George Guthrie	03/27/92
361	VISILOG-01-00-00	George Guthrie	03/27/92
362	CIAP-01-00-00	George Guthrie	03/27/92
363	FCIAP-01-00-00	George Guthrie	03/27/92
364	SUN_TOPS-01-00-00	George Guthrie	03/27/92
365	MAC_TOPS-01-00-00	George Guthrie	03/27/92
366	IMIX-01-00-00	George Guthrie	03/27/92
367	UNIX-01-00-00	George Guthrie	03/27/92
368	MAC_OS-01-00-00	George Guthrie	03/27/92
369	VAX_VMS-01-00-00	George Guthrie	03/27/92
370	DOS-01-00-00	George Guthrie	03/27/92
371	FORTRAN_COMPILERS-01-00-00	George Guthrie	03/27/92
372	ADEM-01-00-00	Steven Reneau	03/27/92
373	SQ-01-00-00	Steven Reneau	03/27/92
374	TASK8-01-00-00	Steven Reneau	03/27/92
375	IDENT-01-00-00	Steven Reneau	03/27/92
376	OS9-01-00-00	Steven Reneau	03/27/92
377	FLEX-01-00-00	Steven Reneau	03/27/92
378	MAC_OS-01-00-00	Steven Reneau	03/27/92
379	VERSATERM-01-00-00	Steven Reneau	03/27/92
380	EXCEL_MAC-01-00-00	Steven Reneau	03/27/92
381	KALEIDAGRAPH-01-00-00	Steven Reneau	03/27/92
382	RS/1-01-00-00	Steven Reneau	03/27/92
383	GEO-PLUS-01-00-00	Steven Reneau	03/27/92
384	SXRAY-01-00-00	Steven Reneau	03/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
385	VISILOG-01-00-00	Steven Reneau	03/27/92
386	CIAP-01-00-00	Steven Reneau	03/27/92
387	FCIAP-01-00-00	Steven Reneau	03/27/92
388	SUN_TOPS-01-00-00	Steven Reneau	03/27/92
389	MAC_TOPS-01-00-00	Steven Reneau	03/27/92
390	IMIX-01-00-00	Steven Reneau	03/27/92
391	UNIX-01-00-00	Steven Reneau	03/27/92
392	FORTRAN_COMPILERS-01-00-00	Steven Reneau	03/27/92
393	VAX_VMS-01-00-00	Steven Reneau	03/27/92
394	DOS-01-00-00	Steven Reneau	03/27/92
395	DATAFLEX_360-01-00-00	Emily Kluk	03/27/92
396	ADEM-01-00-00	Emily Kluk	03/27/92
397	TASK8-01-00-00	Emily Kluk	03/27/92
398	OS9-01-00-00	Emily Kluk	03/27/92
399	FLEX-01-00-00	Emily Kluk	03/27/92
400	MAC_OS-01-00-00	Emily Kluk	03/27/92
401	VERSATERM-01-00-00	Emily Kluk	03/27/92
402	EXCEL_MAC-01-00-00	Emily Kluk	03/27/92
403	KALEIDAGRAPH-01-00-00	Emily Kluk	03/27/92
404	RS/1-01-00-00	Emily Kluk	03/27/92
405	GEO-PLUS-01-00-00	Emily Kluk	03/27/92
406	SXRAY-01-00-00	Emily Kluk	03/27/92
407	VISILOG-01-00-00	Emily Kluk	03/27/92
408	SUN_TOPS-01-00-00	Emily Kluk	03/27/92
409	MAC_TOPS-01-00-00	Emily Kluk	03/27/92
410	UNIX-01-00-00	Emily Kluk	03/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
411	VAX_VMS-01-00-00	Emily Kluk	03/27/92
412	DOS-01-00-00	Emily Kluk	03/27/92
413	FORTRAN_COMPILERS-01-00-00	Emily Kluk	03/27/92
414	DIONEX_AI450-01-00-00	E. Essington	09/03/92
415	DOS-01-00-00	E. Essington	09/03/92
416	MS_WINDOWS-01-00-00	E. Essington	09/03/92
417	MS_DOS-01-00-00	E. Essington	09/03/92
418	MS_QUICKBASIC-01-00-00	E. Essington	09/03/92
419	SAS_FOR_SUNX-01-00-00	E. Essington	09/03/92
420	COHORT-01-00-00	E. Essington	09/03/92
421	FORTRAN_COMPILERS-01-00-00	E. Essington	09/03/92.
422	QUATTRO_PRO-01-00-00	E. Essington	09/03/92.
423	PKZIP-01-00-00	E. Essington	09/03/92
424	NLINISO.SAS	E. Essington	10/08/92
425	ESCP-01-00-00	Emily Kluk	03/27/92
426	VISTA-01-00-00	Emily Kluk	03/27/92
427	POSTSOFT-01-00-00	Steve Chipera	04/08/92
428	COREL_DRAW-01-00-00	Steve Chipera	04/08/92
429	BIO-RAD-01-00-00	Steve Chipera	04/08/92
430	SPECTRALAB-01-00-00	Steve Chipera	04/08/92
431	POSTSOFT-01-00-00	David Bish	04/08/92
432	COREL_DRAW-01-00-00	David Bish	04/08/92
433	BIO-RAD-01-00-00	David Bish	04/08/92
434	SPECTRALAB-01-00-00	David Bish	04/08/92
435	DIFFRACTINEL-01-00-00	Steve Chipera	04/20/92
436	DIFFRACTINEL-01-00-00	David Bish	04/20/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
437	TABLE_CURVE-01-00-00	Steve Chipera	04/20/92
438	TABLE_CURVE-01-00-00	David Bish	04/20/92
439	PLAN_PERFECT-01-00-00	June Fabryka-Martin	04/02/92
440	MS_QUICKBASIC-01-00-00	Brent Newman	04/06/92
441	EM4105-01-00-00	Barbara Carlos	04/06/92
442	MINFILE-01-00-00	Barbara Carlos	04/06/92
443	DOS-01-00-00	Schon Levy	04/17/92
444	RS/1-01-00-00	Schon Levy	04/17/92
445	EM4105-01-00-00	Schon Levy	04/17/92
446	ADEM-01-00-00	Schon Levy	04/17/92
447	VISTA-01-00-00	Schon Levy	04/17/92
448	TASK8-01-00-00	Schon Levy	04/17/92
449	SQ-01-00-00	Schon Levy	04/17/92
450	OS9-01-00-00	Schon Levy	04/17/92
451	IDENT-01-00-00	Schon Levy	04/17/92
452	FLEX-01-00-00	Schon Levy	04/17/92
453	LCLSQ-01-00-00	Steve Chipera	05/01/92
454	TGRAF-01-00-00	Steve Chipera	05/01/92
455	PIZAZZ_PLUS-01-00-00	Steve Chipera	05/01/92
456	LCLSQ-01-00-00	David Bish	05/01/92
457	TGRAF-01-00-00	David Bish	05/01/92
458	PIZAZZ_PLUS-01-00-00	David Bish	05/01/92
459	WINDOWS_EXCEL-01-00-00	R. Morley	05/19/92
460	WINDOWS_EXCEL-01-00-00	Brent Newman	07/01/92
461	CDFTOOLS-01-00-00	Bruce Robinson	07/21/92
462	QUANT-01-00-00	Steve Chipera	10/27/92

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
463	QUANT-01-00-00	David Bish	10/27/92
464	MATHCAD-01-00-00	F. Perry	10/27/92
465	SYSTAT-01-00-00	F. Perry	10/27/92
466	WINDOWS_EXCEL-01-00-00	F. Perry	10/27/92
467	IGPET-01-00-00	F. Perry	10/27/92
468	AXUM-01-00-00	F. Perry	10/27/92
469	SURFACE_DISPLAY_SYSTEM-01-00-00	F. Perry	10/27/92
470	DESIGNER-01-00-00	F. Perry	10/27/92
471	SURFER-01-00-00	F. Perry	10/27/92
472	SURFER-01-00-00	R. Morley	10/27/92
473	SURFER-01-00-00	C. Scherschel	11/04/92
474	WINDOWS_EXCEL-01-00-00	L. Bowker	11/04/92
475	WINDOWS_EXCEL-01-00-00	C. Scherschel	11/04/92
476	SURFER-01-00-00	L. Bowker	11/04/92
477	QUATTRO_PRO-01-00-00	June Fabryka-Martin	12/10/92
478	DIONEX_AI450-01-00-00	June Fabryka-Martin	12/10/92
479	FCIAP-01-00-00	Barbara Carlos	01/05/93
480	CIAP-01-00-00	Barbara Carlos	01/05/93
481	VISILOG-01-00-00	Barbara Carlos	01/05/93
482	SXRAY_SUN-01-00-00	Barbara Carlos	01/05/93
483	GEO-PLUS-01-00-00	Barbara Carlos	01/05/93
484	GENPLOT-01-00-00	Bruce Robinson	03/15/93
485	SORBEQ-01-00-00#	Bruce Robinson	03/15/93
486	CRYSTAL_BALL_WINDOWS-01-00-00	F.Perry	03/30/93
487	FOX_PRO-01-00-00	Rich Morley	03/25/93
488	QUICKBASIC_STDS-01-00-00	Dave Morris	03/25/93

SDDR STATUS ACCOUNTING FOR FOURTH QUARTER 1993

ID	APPLICATION	REQUESTOR	DATE
489	TRACRN-01-00-00 Probationary Release	Lynn Trease	03/26/93
490	VAX_VMS-01-00-00	Robert Raymond	07/01/93
491	XRF-11-01-00-00	Robert Raymond	07/01/93
492	PATASC-01-00-00	Steve Chipera	07/07/93
493	PATASC-01-00-00	George Guthrie	07/07/93
494	PATASC-01-00-00	David Bish	07/07/93
495	LOTUS_123-01-00-00	Giday WoldeGabriel	07/12/93
496	NEWMODF-01-00-00	Steve Chipera	07/22/93
497	NEWMODF-01-00-00	David Bish	07/22/93
498	dBASE_IV-01-00-00	Andrew Burningham	09/23/93

This page left intentionally blank

Appendix D

Controlled Documents Issued in 1993

DOCUMENT CONTROL STATUS REPORT FOR 1993

NEW DOCUMENTS	REVISED DOCUMENTS	DELETED DOCUMENTS
EES-13 Environmental Safety and Health Plan	TWS-EES-DP-101, R1 was superseded by **LANL-EES-DP-101, R2**, Sample/Specimen Collection, Identification, and Control for Mineralogy-Petrology Studies	TWS-EES-DP-127, R0, Sample Collection of Muck from Excavation of the Exploratory Shaft Facility
Volcanism Field Safety Plan, R1	TWS-EES-13-DP-606, R1 was superseded by **LANL-EES13-DP-606, R2**, Volcanism Field Studies	LANL-EES-DP-605, R1, Preparation of Powders from Rock Cinder and Ash Samples
EES-13 SOP for Operation of Truck-Mounted Backhoe, R1	LANL-EES13-DP-608, R0 was superseded by **LANL-EES13-DP-608, R1**, Procedure for Preparation of Splits and Powders from Soil Samples	TWS-QAS-QP-01.1, R2, Interface Control Procedure
Excavation Plan for Volcanism Soil Pits, R0	LANL-INC-DP-92, R0 was superseded by **LANL-INC-DP-92, R1**, Sample Leaching to Extract Soluble Chloride and Bromide	
EES-1 Standard Operating Procedure for Safety During Field Work	LANL-INC-DP-95, R0 was superseded by **LANL-INC-DP-95, R1**, Preparation of Samples for Chlorine-36 Analysis	
LANL-EES-DP-134, R0 INEL X-ray Diffraction Procedure	LANL-EES-DP-111, R2 was superseded by **LANL-EES-DP-111, R3**, RIGAKU 3064 X-ray Fluorescence Spectrometer Operating System	
LANL-EES-DP-327, R0, Use of a Flow Cytometer to Determine Particle Concentrations in Solution	LANL-EES-13-DP-609, R0 was superseded by **LANL-EES-13-DP-609, R1**, Balance and Weight Calibration by LANL Standard and Calibration Group	
LANL-EES-DP-328, R0, Use of an Ion-Selective Electrode to Determine Ion Concentrations in Solution		

NEW DOCUMENTS	REVISED DOCUMENTS	DELETED DOCUMENTS
SVA-2, Prolog Variance for DCL Files/Unix Shell Scripts		
SVA-5, Users Manuals for reuse components		
SVA-15, Allow Prologs to be optional for Support Modules		
SAV-16, Wording Clarification for VVP Template		
SVA-9, Use of Pre-Existing Development Software		
SVA-10, SCF-89 Certification of SS/ACS without a VVR		
SVA-12, Minimum Documentation Requirements		
SVA-13, Allow Limited Modification of ACS		

APPENDIX E

Los Alamos Deficiency Database

Introduction

In the following pages, deficiencies are categorized by document, which is listed at the top of each page. Deficiencies are also grouped by year. Deficiencies can be identified by referring to the abbreviations listed below.

Deficiencies are compiled from Project Office and internal audit and survey reports, stop work order and conflict resolution logs, and the Los Alamos deficiency report data base. Deficiencies fixed during audits and surveys are included (identified in the "FIXED" column).

Abbreviations

• SDR-562	Standard Deficiency Report 562, issued by Project Office.
• CAR-92-001	Corrective Action Report 001, issued by Project Office. 92 is the fiscal year (1992) deficiency was written.
• DR 135 R5, 18.2.7	Los Alamos Internal Deficiency Report #135. R5 is version of procedure; 18.2.7 is section of procedure violated.
• 91-008-1	Los Alamos internal audit 91-008, conducted in 1991. Deficiency #1 was fixed during the audit.
• YA-90-01-7	Project Office audit 90-01, conducted in 1990. Deficiency #7 was fixed during the audit.
• SR-91-014	Project Office Survey 91-014, conducted in 1991. Deficiency #14 was fixed during the survey.
• SWO-LA07	Los Alamos stop work order #07.
• CR-001	Los Alamos conflict resolution #01.

Table I. Detailed Procedures (DPs)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
	YA- 90-01-12 DP 07, R3	DR 140 DP 06 DR 160 DP 35 DR 174 DP 607, R0 DR 178 DP 401, R0 DR 187 DP 35, R1	91-002-3 DP 606, R1 91-008-4 DP 15 91-10-2 DP 607, R0, 6.6	DR 199 DP 607, R0, 2.0, 4.0 DR 201 DP 608, R0 DR 206 DP 87, R1 DR 206 DP 90, R0 DR 206 DP 87, R2 DR 206 DP 96, R0 DR 206 DP 95, R0 DR 206 DP 90, R1		DR 219 DP 101, R2 9.0 DR 232 DP 79, R1	93-04-04 DP 606, R2 93-04-02 DP 607, R0, 6.1 93-12-03 DP 86, R0
Total							
0	1	5	3	8	0	2	3

Table II. QAPP (R5)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 011 v4.3 DR 012 v4.3 DR 013 v4.3 DR 017 v4.3, 2.1.1 DR 024 v4.4, 3.1.9 SDR 511 Sec. 1 & 2 SDR 513 v4.3, 2.1.1 DR 053 v4.4 DR 077 v4.4, 3.1.3 DR 115 v4.4		DR 135 v5 DR 137 v5 DR 143 v5 DR 151 v5, 18.2.7 CAR- 91-041,v5 DR 174 R5		CAR- 92-057,v5		No deficiencies in 1993	
Total							
10	0	6	0	1	0	0	0

Table III. QP-01.1 (R2)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 026 R2, 6.2 DR 028 R2, 1.1 DR 91 R2, 6.1-6.2			91-003-3 R0, 6.2 91-008-1 R2	No deficiencies in 1992		CAR- 93-049 - Deleted in 12/93	
Total 3	0	0	2	0	0	1	0

Table IV. QP-01.2 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 013 R0, 6.3 DR 016 R0, 6.2 DR 093 R0	YA- 90-01-7 R0	No deficiencies in 1991		No deficiencies in 1993		No deficiencies in 1993	
Total 3	1	0	0	0	0	0	0

Table V. QP-01.3 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		No deficiencies in 1992		No deficiencies in 1993	
Total							
0	0	0	0	0	0	0	0

Table VI. QP-02.3 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		No deficiencies in 1992		No deficiencies in 1993	
Total							
0	0	0	0	0	0	0	0

Table VII. QP-02.4 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
DR 115, RO, Sec. 5.1		DR 132, RO, 5.1		No deficiencies in 1992		No deficiencies in 1993	
Total							
1	0	1	0	0	0	0	0

Table VIII. QP-02.5 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 034, R0, 6.2-6.5 DR 095, R0 DR 096, R0 DR 103, R0 SWO-LA02, R0		DR 136, R0 DR 145, R0, 6.3 DR 163, R0, 6.1, 6.1.1 DR 169, R0, 6.2 DR 177, R1, 6.1.2	91-001-1 R0, 6.2.1 91-002-2 R0, 6.2 91-013-1 R0, 6.2.4 YA-91-03-1 R0 91-11-1, R0 6.2.3 91-12-1, R0 6.2.3 91-12-2, R0 6.2.4		92-006-1 R1, 6.1.4 92-006-4 R1, 6.1.6 YA-92-19-03 R1 YA-92-19-01 R1 YA-92-19-02 R1	DR 227, R1, 6.1.1 DR 229, R1, 6.2.3 DR 231, R1, 6.2.3	93-09-01, R1, 6.1.2 93-10-01, R1, 6.1.1, .2 93-12-01 R1, 6.1.2
Total							
5	0	5	7	0	5	3	3

Table IX. QP-02.6 (R1)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 032, R0, 5.3.1 DR 034, R0, 6.1.3 DR 095, R0 DR 096, R0 DR 103, R0 SWO-LA02, R0		DR 173, R1, 6.1	91-11-2, R1, 6.5 91-12-3, R1, 6.1.6, 6.5		92-006-2 R1, 6.1.5 92-006-2 R1, 6.1.3 *Superceded by QP-2.11, R0*
Total					
6	0	1	2	0	2

Table X. QP-02.7 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 027 R0, 6.4.4.2 DR 033 R0, 5.5 DR 051 R0, 6.2.1 DR 052 R0, 6.2.1 DR 068 R0, 6.2 DR 074 R0, 6.2 DR 092 R0, 6.2 DR 095 R0 DR 096 R0 DR 100 R0, 6.2.1 DR 103 R0, 6.2 DR 113 R0, 6.2 SWO-LA02 R0		DR 145 R1, 6.2 DR 156 R1, 6.2 DR 157 R1, 6.4.3	91-006-1 R1, Att. 1 91-12-3 R1, 6.4.5	DR 207 R1, 6.2 DR 213 R1, 6.2 DR 208 R1 DR 205 R1 DR 216 R1, 6.2	92-001-1 R1, 6.5.6 92-002-4 R1, 6.4.7,.8 92-004-3 R1, 6.4.7 92-006-4 R1, 6.4.7 92-10-001 R1, 6.2 92-13-001 R1, 6.2	DR 219 R1, 6.2 DR 221 R1, 6.2 DR 214 R1, 9.0 DR 213 R1, 6.2	93-05-01, R1, 6.2 93-10-02,R1, 6.2
Total							
13	0	3	2	5	6	4	2

Table XI. QP-02.8 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		No deficiencies in 1991		No deficiencies in 1992	*Procedure deleted*
Total					
0	0	0	0	0	0

Table XII. QP-02.9 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 095, R0 DR 096, R0 DR 103, R0 SWO-LA02, R0			91-12-5 R0, 6.1.4	DR 200 R0, 5.1, 6.1	92-003-1 R0, 6.3	DR 230 R1, 6.1	93-07-01, R1, 6.1
Total 4	0	0	1	1	1	1	1

Table XIII. QP-2.11 (R1)

1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1992			93-07-02 R1, 6.2.4 93-09-02 R1, 6.1.1 93-10-03 R1, 6.1.2
Total 0	0	0	3

Table XIV. QP-03.2 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 024 R0, 6.3.1 DR 067 R0, 2.0 DR 080 R0, 7.0 DR 081 R0, 5.2 DR 082 R0, 7.0 DR 105 R0, 6.3.1 DR 120 R0, 2.0	YA-90-01-2 R0 SDR 512 R0, 3.2.1	DR 146 R0, 6.1.1 DR 152 R0, 6.3.1 DR 162 R0, 7.0 DR 184 R0, 6.3.1	91-001-02 R0, 6.2.1 91-002-2 R0, 6.2.1 SR-91-014 R0 91-12-6 R0, 6.2.2, & 6.2.4	DR 199 R0, 5.0 DR 197 R0, 7.0 DR 222 R0, 7.0	*92-002-5 R0, 6.1.1* *Superceded by QP-3.23, R0*
Total					
7	2	4	4	3	1

Table XV. QP-03.3 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 069 R0, 5.2 DR 070 R0, 6.5.1 DR 072 R0 DR 073 R0, 5.2 DR 074 R0 DR 075 R0 DR 077 R0	YA-90-01-1 R0	DR 147 R0, 6.0, & 6.2.6 DR 153 R0, 3.2.3, & 3.1.2 DR 162 R0, 6.2.4 DR 172 R0			*Superceded by QP-3.23, R0*
Total					
7	1	4	0	0	0

Table XVI. QP-03.5 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
DR 005, R0 DR 015 R0, 6.5 DR 058 R0, 6.1-.3 DR 059 R0, 6.1 DR 064 R0, 6.2 DR 071 R0, 6.5.1 DR 076 R0, 6.9.1 DR 090 R0, 6.5 DR 140 R0, 6.8 DR 106 R0, 6.3 DR 107 R0, 6.1 DR 117 R0, 6.5.1 DR 119 R0, 6.6.5 DR 123, R0 SDR 512, R0		DR 191, R0 DR 185 R0, 6.5.2 DR 187 R0, 6.6.3 DR 188 R0, 6.5, 6.8 DR 190 R0, 6.9.1 DR 180 R0, 6.6.3 DR 179 R0, 6.5.2, 6.3, 6.8 DR 173, R0 DR 178 R0, 6.5.1, 6.6.1 DR 142 R0, 6.0 DR 148 R0, 6.5, 6.8 DR 159 R0, 6.5.2 DR 160 R0, 6.6.3 SWO-LA06 R0, 6.8	91-003-4 R0, 6.1 91-004-1,2,3 R0, 6.5.2, 6.8 91-008-2 R0, 6.6.5, 6.6.3 91-013-2, 3 R0, 6.6.5, 6.6.3 YA-91-03-2 R0 91-014-1, R0 91-015-1 R0, 6.1 91-10-1 R0, 6.8 91-11-3 R0, 6.5.2 91-12-7 R0, 6.3, 6.8	DR 199 R0, 5.0 CAR-92-058 R0, 6.9.1	92-08-001 R0, 6.6.3 92-001-2 R0, 6.8 92-002-1 R0, 6.1, 6.8 92-002-2 R0, 6.6.3 92-002-3 R0, 6.2, 6.8 92-003-3 R0 6.1, .2, .3, .8 92-004-1 R0, 6.6.5 92-004-2 R0, 6.1	DR 220 R1, 6.5.3	93-04-01 R1, 6.4 93-06-01 R1, 6.5.3.1 93-12-02 R1, 6.2, .3, .4
Total							
15	0	14	10	2	8	1	3

Table XVII. QP-03.7 (R0)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		No deficiencies in 1991		No deficiencies in 1992		No deficiencies in 1993	
Total 0	0	0	0	0	0	0	0

Table XVIII. QP-03.14 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		No deficiencies in 1991			*Superceded by QP-3.24*
Total 0	0	0	0	0	0

Table XIX. QP-03.15 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 029 R1, 4.0		No deficiencies in 1991			*Superceded by QP-3.24*
Total 1	0	0	0	0	0

Table XX. QP-03.16 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		No deficiencies in 1991			*Superceded by QP-3.25*
Total 0	0	0	0	0	0

Table XXI. SQAP (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
Note Issued in 1989 SWO-LA01		DR 155 R0, 7.2.7		DR 195 R0, 5.2.2.3 DR 209 R0, 7.2.11.2 DR 213, R0 DR 214, R0 SWO-LA08 R0, Fig. 1 DR 215 R0, 6.2.9		DR 222 R0, 6.0	
Total 0	0	1	0	6	0	1	0

Table XXII. QP-3.17 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		CAR-93-018 R0, 6.2.2 DR 211 R0, 6.1, 6.2 6.3 DR 213, R0 DR 214, R0 DR 215, R0 SWO-LA08 R0		DR 222 R0, 6.0	
Total 0	0	0	0	6	0	1	0

Table XXIII. QP-3.18 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		DR 213, R0 DR 214, R0 DR 215, R0		No deficiencies in 1993	
Total 0	0	0	0	3	0	0	0

Table XXIV. QP-3.19 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		DR 213, R0 DR 214, R0 DR 215, R0 SWO-LA08 R0		No deficiencies in 1993	
Total 0	0	0	0	4	0	0	0

Table XXV. QP-3.20 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		CAR-92-019 R0, 6.2.4.1 DR 209 R0, 6.2.10.1.1 DR 213, R0 DR 214, R0 DR 215, R0 SWO-LA08 R0		DR 222 R0, 6.0	
Total 0	0	0	0	6	0	1	0

Table XXVI. QP-3.21 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
	YA-91-03-3 R0	No deficiencies in 1991		DR 212, R0, 6.3.3.2.3 DR 213, R0 DR 214, R0 DR 215, R0 SWO-LA08 R0	92-17-001 R0, 6.3.3.2.3	DR 222 R0, 6.0	
Total 0	1	0	0	5	1	1	0

Table XXVII. QP-3.22 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		DR 213, R0 DR 215, R0, 6.2.9 SWO-LA08 R0			
Total 0	0	0	0	3	0	0	0

Table XXVIII. QP-3.23 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		DR 210, R0 Att. 3		DR 222 R0, 7.0	
Total 0	0	0	0	1	0	1	0

Table XXIX. QP-3.24 (R0)

1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1992		No deficiencies in 1993	
Total 0	0	0	0

Table XXX. QP-3.25 (R0)

1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1992			93-01-01 R0, 6.3.3, 7.1.1
Total 0	0	0	1

Table XXXI. QP-4.1 (R2)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 004, R2 DR 006, R1 DR 018, R2 DR 019, R2 DR 021, R0 DR 022 R2, 1.0 DR 023 R2, 2.0 DR 035 R2, 6.3 DR 036 R2, 7.1 DR 037 R2, 7.1.7 DR 061 R0, 6.3.2 DR 062 R2, 7.1.7 DR 063 R2, 6.1.1.2 DR 065 R2, 7.1.7 DR 066 R2, 7.1.5 DR 078 R2, 6.3 DR 085 R2, 6.2 DR 108 R2, 6.3 DR 113, R2 SDR 491, R2 SDR 515 R2, 6.4	YA-90-01-4 R2, 6.4	DR 150 R2, 6.6		*Superceded by QPs-4.4, and -4.5*	
Total					
21	1	1	0	0	0

Table XXXII. QP-4.2 (R2)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 083 R2, 5.0 DR 084 R2, 5.0		No deficiencies in 1991		No deficiencies in 1992	*Superceded by QPs-4.4 and -4.5*
Total 2	0	0	0	0	0

Table XXXIII. QP-4.3 (R1)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 003, R1 DR 020, R1	YA-90-01-3 R1 YA-90-01-6 R1	CR-001, R1 DR 166 R1, 6.1, 6.3		No deficiencies in 1992	*Superceded by QPs-4.4 and -4.5*
Total 2	2	2	0	0	0

Table XXXIV. QP-4.4 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		DR 139 R0, 6.7 CAR-92-001 R0 DR 175 R0, 6.5, 6.2, & 6.1 DR 182 R0, 2.0	YA-92-01-1 R0		92-10-002 R1, 6.2		93-12-04 R1, 6.2, .7 93-09-03 R1, 6.5.1 93-10-04 R1, 6.3, 6.5.1
Total 0	0	4	1	0	1	0	3

Table XXXV. QP-4.5 (R2)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
Not applicable		DR 149 R0, 6.1.1 SWO-LA05, R0 CAR-92-001 R0 DR 182 R0, 4.2		No deficiencies in 1992		DR 224 R2, 6.3	
Total 0	0	4	0	0	0	1	0

Table XXXVI. QP-5.1 (R0)

1990		1991	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
DR 002, R3 DR 009 R3, 6.4 DR 010 R3, 6.4 DR 041 R3, 7.2 DR 047 R3, 6.2, & 6.3		No deficiencies in 1991	*Superceded by QP-06.2*
Total 5	0	0	0

Table XXXVII. QP-5.2 (R0)

1990		1991	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
DR 007 R2, 5.2 DR 118 R2, 7.0 DR 144, R2		No deficiencies in 1991	*Superceded by QP-06.3*
Total 3	0	0	0

Table XXXVIII. QP-6.1 (R5)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 001 R1, 5.2 DR 030 R1, 5.2 DR 039 R1, 5.2 DR 045 R1, 6.5 DR 046 R1, 6.5 DR 116 R1, 6.3 DR 124 R2, 6.3.2 DR 122 R0, 6.2.12.1		DR 161, R2 DR 168 R2, 6.3.3.2 DR 174 R3, 5.7 DR 189 R2, 4.2	91-001-03 R2, 6.3.3 91-003-05 R2, 5.4	DR 196 R1, 6.3.3	YA-92-12-01, R3, 6.5	DR 232 R5, 6.1.1	93-12-05 R5, 6.3 93-09-04 R5, 9.0
Total 8	0	4	2	1	1	1	2

Table XXXIX. QP-6.2 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		No deficiencies in 1991		DR 198 R1, 6.25 DR 201 R0, 6.2.6 DR 213 R0, 9.0 DR 214 R0, 7.0 DR 215 R0, 6.2.9		DR 217 R1, 6.2.2 DR 226 R1, 6.1.1	
Total							
0	0	0	0	5	0	2	0

Table XL. QP-6.3 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		DR 144, R0 DR 161 R0, 6.2.10.2 DR 189 R0, 6.2.10.2		DR 201 R0, 6.2.6 DR 206 R0, 6.1, 6.2 6.2.6		DR 221 R0, 9.1	93-02-02, R0, 6.2
Total							
0	0	3	0	2	0	1	1

Table XLI. QP-08.1 (R2)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
DR 038 R0, 7.1 DR 094 R1, 6.2.1 DR 125 R1, 6.2.1		CAR-92-002 R1, 6.4			92-13-001, R2 92-13-002, R2, 6.3.2	No deficiencies in 1993	
Total							
3	0	1	0	0	2	0	0

Table XLII. QP-08.2 (R0)

1990		1991	
Deficiency	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		DR 154 R0, 6.1 DR 167 R0, 6.1	*Superceded by QP-08.3*
Total			
0	0	2	0

Table XLIII. QP-08.3 (R0)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
Not applicable		Not applicable		No deficiencies in 1992		DR 225 R0, 6.1.2, 6.2.1	
Total							
0	0	0	0	0	0	1	0

Table XLIV. QP-12.1 (R6)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 025 R4, 6.7 DR 051 R4, CR140 DR 053 R4, 6.7 DR 054 R4, 6.7 DR 055 R4, 6.7 DR 057 R4, 6.7 DR 099 R4, 5.2 6.1.1 DR 101 R4, 6.3.2 DR 100, R4 DR 102 R4, 6.7 DR 109 R4, 4.9, 6.1.1 DR 110 R4, 7.1 DR 112 R4, 4.5, 4.9, 6.4 DR 126 R4, 7.1 DR 128 R4, 6.7 SDR 490 R3, 4.8	YA-90-01-10 R4, 4.6	DR 137 R4, 6.7 DR 141 R4, 2.0 DR 160 R4, 5.5 CAR-92-003 R4, 6.3 DR 171 R4, 6.7 DR 176 R4, 6.7 DR 187 R4, 5.5 DR 192 R4, 6.3 DR 193 R4, 6.3, 6.4	91-003-2 R4, 6.6 91-008-3 R4, 6.1.1, 6.4 YA-91-03-4 R4	DR 216 R6, 9.0 DR 199 R4, 2.0 DR 203 R6, 6.4.4.2a DR 208 R6, 6.2.1, 6.2.2, & 6.2.3	92-001-3 R4, 7.1 92-10-003 R6, 6.0	DR 216 R6, 9.0 DR 228 R6, 6.4	93-04-03 R6, 6.2 93-09-05 R6, 6.4.3.2
Total							
16	1	9	3	4	2	2	2

Table XLV. QP-13.1 (R2)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
No deficiencies in 1990		No deficiencies in 1991		No deficiencies in 1992		No deficiencies in 1993	
Total							
0	0	0	0	0	0	0	0

Table XLVI. QP-15.2 (R1)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 114 R1, 6.7.5 DR 121 R1, 6.3.1 DR 127 R1, 6.7.3	YA-90-01-8 R1	DR 158 R1, 7.0 DR 186 R1, 6.7.4.3	YA-91-03-5 R1 YA-91-03-6 R1	No deficiencies in 1992		No deficiencies in 1993	
Total							
3	1	2	2	0	0	0	0

Table XLVII. QP-16.2 (R2)

1990		1991		1992		1993	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 056 R0, 6.1.1, CR 123 SDR 597, R0		No deficiencies in 1991		No deficiencies in 1992		No deficiencies in 1993	
Total							
2	0	0	0	0	0	0	0

Table XLVIII. QP-16.3 (R1)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
Not applicable		Not applicable		No deficiencies in 1992		No deficiencies in 1993	
Total 0	0	0	0	0	0	0	0

Table XLIX. QP-17.1 (R0)

1990		1991		1992	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
No deficiencies in 1990		DR 164 R1, 6.2.3 DR 170 R1, 6.7.3.5 DR 183 R1, 6.4.1			*Superceded by QP-17.3*
Total 0	0	3	0	0	0

Table L. QP-17.3 (R0)

1990		1991		1992	
Deficiency	**Fixed**	**Deficiency**	**Fixed**	**Deficiency**	**Fixed**
DR 031 R0, 6.2 DR 040 R0, 6.2 DR 042 R0, 6.4.1 DR 043 R0, 6.4.1 DR 044 R0, 6.4.1 DR 048 R0, 6.1 DR 049 R0, 6.3.3 DR 050 R0, 6.3.2 DR 060 R0, 6.3.3 DR 075 R0, 6.2 DR 079 R0, 6.4.2 DR 086 R0, 4.5.4 DR 087 R0, 6.4.2 DR 089 R0, 6.4.5 DR 095, R0 DR 096, R0 DR 111 R0, 6.4.5 DR 088 R0, 6.4.3	91-001-04 R1, 6.2.1 91-002-1 R1, 6.2.1 91-003-1 R1, 6.6.3	DR 129 R0, 6.5.4 DR 130 R0, 6.4.6 DR 133 R1, 6.3.5.1, 6.3.5.6, 6.6.3 DR 138, R1 DR 142 R0, 6.0 SWO-LA07 R0, 6.10 DR 164 R1, 6.2.3 DR 170 R1, 6.7.3.5 DR 183 R1, 6.4.1 DR 165 R1, 6.10.3	91-12-8 R1, 6.2.2 91-001-04 R1, 6.2.1 91-002-1 R1, 6.2.1 91-003-1 R1, 6.6.3	DR 204 17.4, R0 6.9.2	YA-92-12-02, R1, 6.2, 6.2.1 YA-92-12-03, R1 Att. 3 *Superceded by QPs-17.4 and -17.5*
Total					
18	3	10	4	1	2

Table LI. QP-17.4 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
Not applicable		Not applicable		DR 202 R0, 6.3.2 DR 204 R0, 6.9.2		DR 216 R0, 9.0 DR 223 R0, 6.1, 6.3	93-02-01 R0 93-06-02 R0, 6.3.5 93-09-06 R0, 6.3.5 93-12-06 R0, 6.4.1
Total 0	0	0	0	2	0	2	4

Table LII. QP-17.5 (R0)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
Not applicable		Not applicable		DR 202 R0, 6.2.3	92-07-001 R0, 6.2.2.2	DR 218 R0, 6.1.2	
Total 0	0	0	0	1	1	1	0

Table LIII. QP-18.1 (R4)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
	YA-90-01-5 R4	DR 143 R4, 6.5 DR 151 R4, 6.5		No deficiencies in 1992		No deficiencies in 1993	
Total 0	1	2	0	0	0	0	0

Table LIV. QP-18.2 (R2)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
	YA-90-01-9 R0	DR 138 R0, 7.1	YA-91-03-8 R2 YA-91-03-9 R2	DR 194 R1, 6.3.1, 6.3.3		No deficiencies in 1993	
Total							
0	1	1	2	1	0	0	0

Table LV. QP-18.3 (R2)

1990		1991		1992		1993	
Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed	Deficiency	Fixed
	YA-90-01-11 R0		YA-91-03-7 R2		YA-92-19-04, R2	No deficiencies in 1993	
Total							
0	1	0	1	0	1	0	0