



AMES LABORATORY

**Annual
Self-Assessment
and
Performance Measures
Report
CY2003**

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Preface

As required under Iowa State University's Contract (W-7405-ENG-82, Modification 350), the following report details the midyear progress on both performance measures and the self-assessment efforts of the Laboratory's various functional areas. The overall rating for the Laboratory is "Outstanding". Additional copies of this report are available by contacting the Laboratory's Office of Industrial Outreach and Technology Administration (515-294-6486, or covey@ameslab.gov).

Laboratory Overall Performance

Introduction

Ames Laboratory, a government owned, contractor operated (GOCO) DOE laboratory, resides on the campus of Iowa State University (ISU), its contractor. The Laboratory's mission is to conduct fundamental research in the physical, chemical, materials, mathematical sciences and engineering which underlie energy generating, conversion, transmission and storage technologies, environmental improvement and other technical areas essential to national needs.

A current Laboratory organization chart is detailed on page 5.

In December 1999, Iowa State University and DOE signed a modification, M300, to the contract W-7405-ENG-82 effective January 1, 2000 through December 31, 2004. Under the terms in this contract, specifically Clause H.31 and I.102, the Parties agreed to utilize a performance-based management system for Laboratory oversight, and ISU, as the contractor, is required to annually provide a written assessment of the Contractor's and Laboratory's performance. The purpose of a performance-based management system is to encourage and reward excellence, continuous improvements and timely communication. Modification 350, to the Contract, provided the objectives, measures and expectations for calendar year 2003. In addition, a subjective, written self-assessment is required of each functional area identified within this Modification. This document constitutes this required written assessment.

Methodology

Several components contribute to the Laboratory's annual overall rating. These include:

- Self-assessment,
- Performance measures,
- Appraisals,
- Audits, and
- Other considerations.

For this reporting period, the overall rating was developed using all of the above. The self-assessment component's content was negotiated between the Laboratory and the Chicago Operations Office (CH) for each functional area. Any appraisals, audits or other considerations that have been performed in individual functional areas have been included in the discussion of the individual performance measures.

The Laboratory overall rating was determined as follows:

1. Each rating for each Performance Measure for each Functional Area is assigned a numerical value based on the adjectival rating as follows:

Adjectival Rating	Numerical Score
Outstanding	4
Excellent	3
Good	2
Marginal	1
Unsatisfactory	0

2. Each numerical score was then weighted based on the weighting factors for each measure and each functional area, then summed to get the overall numerical score. The overall numerical score was then used to determine the overall adjectival rating as follows.

Numerical Score	Adjectival Rating
3.5-4.00	Outstanding
2.5-3.49	Excellent
1.5-2.49	Good
0.5-1.49	Marginal
0.01-0.49	Unsatisfactory
0.00	Not available*

*Performance measures that are "unavailable" at the end of the reporting period are assigned a numerical score of 0.0 for ease of using both the database and spreadsheets associated with performance measures.

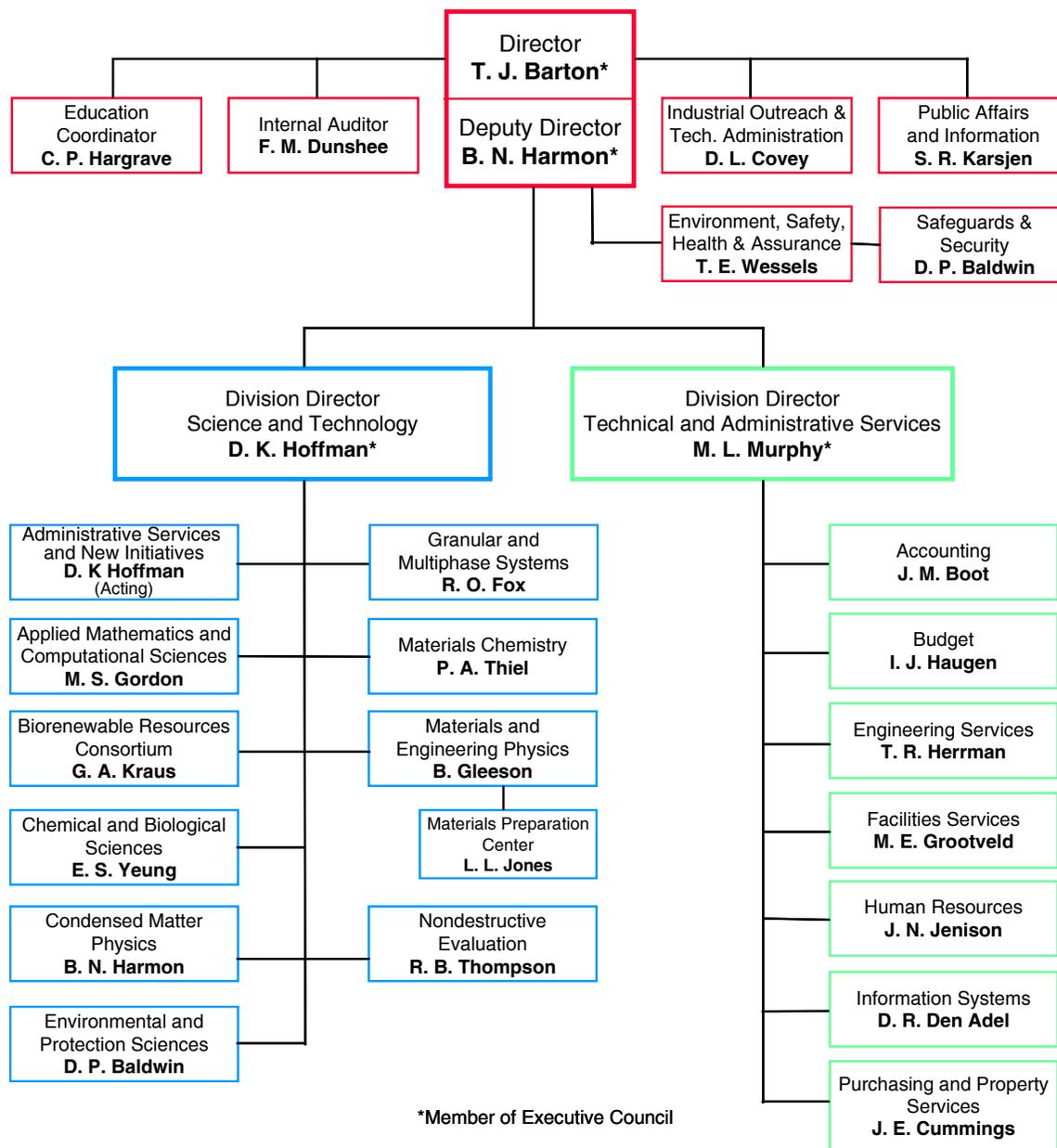
Business Results

For determining the overall fee-based contractual performance measures, Science Programs, Critical Operations, and Strategic Guidance, Oversight and Management were all rated "Outstanding." In addition, all three areas' self-assessment subjective rating was "Outstanding". Overall, in meeting the fee-based measures and assessment, the Laboratory was rated "Outstanding" in both performance measures and its subjective self-assessment; giving a combined rating (both PM & SA) of "Outstanding."

General Operations achieved an "Outstanding " rating on the metrics defined within the Contract and also based upon the self-assessments; therefore General Operations' combined rating is "Outstanding."

See Charts 1-2, pages 7 and 9, for a tabular summary of the end-of-year results. See the individual self-assessment, as required, for discussion on each area's performance.

Ames Laboratory Organization



October 2003

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Chart 1. Summary of Results.

CY2003		Performance Measure Ratings			Self Assessment Rating	
Functional Areas	Weight%	Numerical Score	Adjectival (1)	Weighted Score	Subjective	Numerical Score
SCIENCE & TECHNOLOGY	70%	4	Outstanding	4.00	Outstanding	4.00
CRITICAL OPERATIONS						
Environment, Safety and Health						
Integrated Safety Management	10%	4	Outstanding			
Environmental Performance & Awareness	5%	4	Outstanding			
Corrective Actions	5%	3	Excellent			
ES&H Overall	20%	4	Outstanding	3.67	Outstanding	4.00
S.Q.O. & M.						
Effective Communications	10%	4	Outstanding			
S.Q.O. & M. Overall	10%	4	Outstanding	4.00	Outstanding	4.00
FEE-BASE RATINGS	100%		Outstanding	3.93	Outstanding	4.00
BUSINESS OPERATIONS						
Science		0.00	Not Applicable		Not Applicable	0.00
Environment, Safety and Health		4.00	Outstanding		Outstanding	4.00
Environmental Operations		4.00	Outstanding		Outstanding	4.00
Financial Management		4.00	Outstanding		Outstanding	4.00
Diversity		4.00	Outstanding		Outstanding	4.00
Procurement		4.00	Outstanding		Outstanding	4.00
Training		4.00	Outstanding		Outstanding	4.00
Scientific & Technical Information		4.00	Outstanding		Outstanding	4.00
Information Management		4.00	Outstanding		Outstanding	4.00
Safeguards & Security		4.00	Outstanding		Outstanding	4.00
Cyber Security		4.00	Outstanding		Outstanding	4.00
Counterintelligence		2.66	Excellent		Excellent	3.00
Human Resources		3.33	Excellent		Outstanding	4.00
Personal Property		0.00	Not Applicable		Excellent	3.00
Communications and Trust		4.00	Outstanding		Outstanding	4.00
Infrastructure		4.00	Outstanding		Outstanding	4.00
Technology Transfer & WFO		3.66	Outstanding		Outstanding	4.00
GENERAL OPERATIONS RATINGS			Outstanding	3.84	Outstanding	3.88
Overall Fee-Base Rating (Perf. Meas. + Self-Assess.)					Outstanding	3.97
Overall Gen. Ops. Rating (Perf. Meas. + Self-Assess.)					Outstanding	3.86
Overall Laboratory Rating Components	Notes:					
Self-Assessment	(1) Composite Ratings derived from functional area numerical score: 3.50 - 4.00 = Outstanding, 2.50 - 3.49 = Excellent, 1.50 - 2.49 = Good, 0.50 - 1.49 = Marginal, 0.01 - 0.49 = Unsatisfactory, 0.00 = Not Applicable (No rating assigned)					
Performance Measures						
Business Reviews						
ESH and Security Appraisals						
IG/GAO Audits						
For-cause Reviews						
Other Considerations						

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Chart 2. Detail by Measure.

CY2003					
Functional Area/Metric	Perform. Level	Equiv. Quant. Score	Reportable FA%	Weighted Point Score	FA Overall Rating
GENERAL OPERATIONS					
Science	NA				NA
Environment, Safety & Health					4.00
Required Reviews and Maintenance	Outstanding	4	33.33	1.33	
Total Recordable Case Rate	Outstanding	4	33.33	1.33	
Reviews and Mtce of 19 x-ray Devices	Outstanding	4	33.33	1.33	
Financial					4.00
% Uncosted Balances to TAC	Acceptable	4	50	2.00	
Zero Billing Errors	Outstanding	4	50	2.00	
Diversity					4.00
Increase or Maintenance of Diverse Workforce	Outstanding	4	100	4.00	
Procurement					4.00
Balance Scorecard	Outstanding	4	100	4.00	
Training					4.00
Mandatory Training	Outstanding	4	100	4.00	
Scientific and Technical Information					4.00
Available Full-text Electronic Reports	Outstanding	4	100	4.00	
Information Management					4.00
Effective IM Activities	Outstanding	4	100	4.00	
Safeguards and Security					4.00
Corrective Actions	Outstanding	4	16.67	0.67	
Vulnerability Assessments Addressed	Outstanding	4	16.67	0.67	
Nuclear Material Accounting System	Outstanding	4	16.67	0.67	
ISSM Implemented Effectively	Outstanding	4	16.67	0.67	
Nuclear Material Control Program Implemented	Outstanding	4	16.67	0.67	
Safeguards and Security Effectively Implemented	Outstanding	4	16.67	0.67	
Cyber Security					4.00
Perform Public Network Vulnerability Scans	Outstanding	4	50	2.00	
Perform Internal Network Vulnerability Scans	Outstanding	4	50	2.00	
Counterintelligence					2.66
% of Contacts or Elicitation Reports Sent	Outstanding	4	33.3	1.33	
% Empl. Receiving Annual CI Briefing	Outstanding	4	33.3	1.33	
Travel Rpts Submitted within 30 Days of Return	Unsatisfactory	0	33.3	0.00	
Human Resources					3.33
Review of Classifications	Outstanding	4	33.3	1.33	
% of Performance Appraisals	Excellent	3	33.3	1.00	
HR Procedures and Controls	Excellent	3	33.3	1.00	
Communications and Trust					4.00
Number of Activities Accomplished	Outstanding	4	100	4.00	
Facilities Management					4.00
FIMS	Outstanding	4	100	4.00	
Tech. Transfer and WFO					3.66
Proactive Approach to Outreach	Excellent	3	33.3	1.00	
Compliance with Applicable Laws	Outstanding	4	33.3	1.33	
Records are Complete and in Compliance	Outstanding	4	33.3	1.33	

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Critical Operations

SCIENCE

OBJECTIVE 1.0: Advancement in the understanding of the fundamental nature of matter and energy.

MEASURE 1.1: Quality Of Research

Reviewers will evaluate the overall quality of the research performed. Depending on the nature of the program, reviewers will consider the following.

SCIENCE: Success in producing original, creative scientific output that advances fundamental science and opens important new areas of inquiry; success in achieving sustained progress and impact on the field; and recognition from the scientific community, including awards, peer-reviewed publications, citations, and invited talks.

TECHNOLOGY: Whether there is a solid technical base for the work; the intrinsic technical innovativeness of the research; the importance of contributions made to the scientific and engineering knowledge base underpinning the technology program; and recognition from the technical community.

MEASURE 1.2: Relevance To DOE Missions And National Needs

Reviewers will consider whether the research fits within and advances the missions of DOE; contributions to U.S. leadership in the international scientific and technical communities; contributions to the goals and objectives of the strategic plans of DOE and other national programs; and the extent of productive interaction with other science and technology programs. Depending on the nature of the program, reviewers will consider the following.

SCIENCE: The program's track record of success in making scientific discoveries of technological importance to DOE missions and U.S. industry; the degree of industrial interest in follow-on development of current research results; and the effective use of national research facilities that serve the needs of a wide variety of scientific users from industry, academia, and government laboratories.

TECHNOLOGY: The value of successfully developing pre-commercial technology, to DOE, other federal agencies, and the national economy; the extent to which expected benefits justify the program's risks and costs; and, where appropriate, the degree of industrial interest, participation, and support.

MEASURE 1.3: Effectiveness And Efficiency Of Research Program Management

Reviewers will consider the quality of research plans; whether technical risks are adequately considered; whether use of personnel, facilities,

and equipment is optimized; success in meeting budget projections and milestones; the effectiveness of decision-making in managing and redirecting projects; success in identifying and in avoiding or overcoming technical problems; the effectiveness with which technical results are communicated to maximize the value of the research results and to gain appropriate recognition for DOE and the Laboratory; effectiveness in developing, managing, and transferring to industry intellectual property and technical know-how associated with research discoveries; and, the degree to which customer and stakeholder expectations are consistently met.

WEIGHT (All measures): 70%

YEAR-END RESULTS: “Outstanding”

COMMENTS: The innovativeness, originality, and creativity of the research conducted at the Laboratory is reflected in its generation of intellectual property, recognition through various awards, invited talks, presentations, and publications. These items are discussed below:

Program Reviews

There were no program reviews in 2003. However, the Condensed Matter Physics and Materials Chemistry programs are scheduled for a Program Review in May, 2004. In addition, the Granular Flow and Kinetics Project was reviewed as part of the Center for Synthesis and Processing in DOE Germantown on June 12th, 2003. S. Subramaniam and D. K. Hoffman attended the review and S. Subramaniam presented the summary of the project accomplishments on behalf of the project team (G. Grest, SNL, I. Aranson, ANL, E. Ben-Naim, LANL, R. O. Fox, Ames Laboratory).

Relevance to DOE Missions/Needs

The DOE’s primary mission is to advance the national, economic and energy security of the United States. The chart below maps the Laboratory’s capabilities and core competencies with the main goals of DOE.

DOE GOAL:	PROGRAM								
	ASNI	AMCS	CBS	CMP	MatChem	MEP	EPSCI	NDE	G&MS
Nuclear Weapons Stewardship									
Nuclear Nonproliferation							X		
Naval Reactors								X	
Energy Security	X	X	X	X	X	X	X	X	X
World-class Scientific Research Capacity	X	X	X	X	X	X	X	X	X
Environmental Management					X		X	X	
Nuclear Waste								X	

In fact, the Laboratory’s newest program, Granular and Multiphase Systems is in direct alignment with promoting the strategic goal to “protect national and economic security by promoting a diverse supply and delivery of reliable, affordable, and environmentally sound energy”. Specifically, efforts are underway to develop reliable and efficient computational methods to predict coal gasification. It is clear that efficient and environmentally responsible measures are needed in the utilization of coal, the nation’s largest fossil energy resource. Computational models that can predict coal gasification can be used to redesign and modify current gasification technologies that will help reduce the impact of refined fuels on water resources, solid waste disposal, and carbon dioxide (CO₂) that is generated in the use of fossil fuels.

New Initiatives

As a result of the on-site review in late FY2002, during FY2003, two new initiatives were developed: Transformation Pathways in the Condensed State, and the second: Coupling Physical and Biological Sciences in the Ames Laboratory. See the section entitled; STRATEGIC GUIDANCE, OVERSIGHT AND MANAGEMENT, for a more detailed discussion on the initiatives.

Awards

Ames scientists have distinguished themselves in the advancement of fundamental and applied science. Laboratory researchers and ISU faculty members, Marc Porter and Robert Lipert, received a R&D 100 Award in 2003 for their ISU funded work in Ramanprobes.

In addition, many of Ames' scientists have received recognition from their peers in the form of various awards including:

<u>Program</u>	<u>Name(s)</u>	<u>Award or Recognition</u>
Bio. Renew. Consortium	Armstrong, Daniel	Chirality Medal 2003 by Societa Chimica Italiana
Chem. & Bio. Sci.	Bakac, Andreja	Elected Alternate Councilor of the Division Inorganic Chemistry of the American Chemical Society
-	Barton, Tom	Federal Laboratory Consortium Director of the Year
Chem. & Bio. Sci.	Espenson, James	2004 ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry
Matls. & Eng. Phy.	Gleeson, Brian	Elected Chairman of the 2005 Gordon Research Conference on High Temperature Corrosion
Matls. & Eng. Phy.	Gleeson, Brian	Lee Hsun Lecture Series Award, Shenyang National Laboratory for Materials Science and the Chinese Academy of Sciences
Matls. & Eng. Phy.	Gschneidner, Karl and Pecharsky, Vitalij	Innovative Housing Technology Award from <i>TechHome Builder</i> magazine (for magnetic refrigeration technology)
Matls. & Eng. Phy.	Jiles, David	ISU Anson Marston Distinguished Professor
Bio. Renew. Consortium	LaRock, Richard	2004 ACS Arthur C. Cope Senior Scholar Award and the 2003 ACS Edward Leete Award
Matls. & Eng. Phy.	Lieb, Jeff	Full member of Sigma Xi, the International Honor Society of Scientific and Engineering Research
Bio. Renew. Consortium	Lin, Victor	National Science Foundation Early Career Award

<u>Program</u>	<u>Name(s)</u>	<u>Award or Recognition</u>
Matls. Chem.	Mallapragada, Surya	ISU Bailey Research Award for innovative research in high-risk areas addressing emerging scientific, technical and/or societal problems
Appl. Math. & Comp. Sci.	Netzlöff, Heather	Sleight Graduate Student Chemistry Scholarship for research excellence from the ISU chemistry department
Env. & Prot. Sci.	Nilsen-Hamilton, Marit	Iowa Regents Award for Faculty Excellence in 2003
Appl. Math. & Comp. Sci.	Olson, Ryan	Graduate student selected by DOE to attend 53 rd Meeting of Nobel Laureates in Lindau, Germany
Matls. & Eng. Phy.	Pecharsky, Vitalij	Excellence in Research Award, ISU
Chem. & Bio. Sci.	Porter, Marc, Lipert, Robert and Schoen, Chris (Concurrent Analytical)	2003 R&D 100 Award for Ramanprobes, a new-generation immunoassay system
Appl. Math. & Comp. Sci.	Rintelman, Jamie	ISU Research Excellence Award
Cond. Matter Phy.	Schmalian, Joerg	ISU Foundation Award for Early Achievement in Research in 2003
Cond. Matter Phy.	Soukoulis, Costas	Alexander von Humboldt Foundation Research Award
Nondestr. Eval.	Thompson, R. Bruce	Elected to the National Academy of Engineering
Chem. & Bio. Sci.	Yeung, Ed	First recipient of the Robert Allen Wright Chair, for building and enhancing the general excellence of ISU's academic programs

Intellectual Property

During FY2003, the Laboratory received 8 patents and 12 patent applications and provisional patent applications were filed on Laboratory disclosures. Five records of invention were disclosed and there were 4 new licenses or options signed by ISU's Office of Intellectual Property and Technology Transfer (OIPTT) based on Ames Laboratory intellectual property.

Publications and Student Support

In addition, Laboratory scientists and researchers submitted and/or published over 300 papers and presented numerous invited talks or lectures in FY2003. Their research supported approximately 150 graduate and post-doctoral students at any one time in 2003. Ames Laboratory funded research also provided the basis of 28 theses in FY2003.

Collaborations

National and international recognition of the caliber of research being performed at Ames is also indicated by the various collaborations with researchers in industry, other federal agencies, universities, and other national laboratories.

In addition to informal collaborations, in 2003, the Laboratory initiated three new CRADA agreements and continued research on several others, and the Laboratory had three new and six ongoing Work For Other non-federal entities agreements and three new and five continuing Work For Other agreements with federal agencies during 2003.

Planning and Budget Review

Each program works closely with their counterparts at DOE to develop research plans that meet the needs of the DOE Strategic Plan, and are closely tied with the Laboratory's core competencies. These plans are documented in our annual Budget Submission and in out-of-cycle proposals. Research proposals submitted to other than DOE and out-of-cycle DOE proposals must have a completed and approved preproposal form (PPF) before submission. The PPF, which is approved at the Deputy Director level, assures Laboratory management that various concerns are addressed and planning has been accomplished, including pertinence to the Laboratory mission, ES&H, appropriate budget considerations, export control and the effects on space utilization.

With the aid of the Laboratory's Budget Office, program review of budgets is monitored on at least a monthly basis. Additional space requirements are reviewed and approved at the Deputy Director level.

Self-Assessment

Background

Scope and Organizational Overview

The mission of the Ames Laboratory is to conduct fundamental research in the physical, chemical, materials, and mathematical sciences and engineering which underlie energy generating, conversion, transmission and storage technologies, environmental improvement, and other technical areas essential to national needs. These efforts are maintained so as to contribute to the achievement of the Mission of the Department of Energy and, more specifically, to increase the general levels of knowledge and technical capabilities, to assist in the efforts on homeland defense, to prepare engineering and physical sciences students for the future, and to develop new technologies and practical applications from our basic scientific programs that will contribute to a strengthening of the US economy.

During most of FY2003, Ames Laboratory had eight scientific program areas; most funded through the DOE's Office of Science (SC) program:

- Applied Mathematics and Computational Sciences
- Administrative Services and New Initiatives
- Chemical and Biological Sciences
- Condensed Matter Physics
- Environmental and Protection Sciences
- Materials Chemistry
- Materials and Engineering Physics
- Nondestructive Evaluation

A new program area, Granular and Multiphase Systems, was established at the end of FY2003. The program managers report to the Division Director of Science and Technology (see organization chart, p.5).

Recent Concerns and Related Actions

A current major concern of the Ames Laboratory is budget reductions to our programmatic research that are not based on scientific reviews. In spite of the fact that the Laboratory's ongoing basic and applied research continues to receive outstanding peer reviews, the trend of decreasing programmatic funding continues. While some of this funding reduction is based on the research being discontinued or completed, much of Ames' on-going research of deemed national importance is being affected. A systematic method of determining research reductions based on the quality (determined by peer and/or DOE reviews) of the research being performed, not just across the board cuts to each Laboratory, seems to be needed.

A second concern is the accelerated erosion of the funding for core programs of the Ames Laboratory. This is a concern we no doubt share with all other Laboratories in the DOE system. New and focused initiatives that grow out of concerns for special needs of the country are important; however, they cannot serve as a replacement for sustained support of programs that advance the broad scientific agenda of the country in critical areas.

Process Management

Key Activities and Services

The Laboratory will rely upon its strengths in materials synthesis and processing, chemical analysis, chemical sciences, photosynthesis, materials sciences, applied mathematical sciences, and environmental technology development to conduct the long-term basic and intermediate-range applied research needed to solve the complex problems encountered in energy production and utilization as well as environmental cleanup and homeland defense. To this end, Ames Laboratory capitalizes on its close connection with ISU to carry out interdisciplinary research focused on national issues. The Laboratory is at the forefront of current materials research efforts, high performance computing, biorenewable uses and materials, and forensic technologies. Its research programs will continue to provide the Nation with basic and applied research in these areas.

Extrapolating from its long-standing and significant strengths in metal-based materials, the Laboratory will continue to extend its capabilities in a variety of new directions. Leading this new thrust will be the somewhat more applied but critically important programs in biological, forensic and computational sciences. The efforts in high-temperature superconductivity have internationally recognized theoretical and experimental components.

These programmatic areas perform a myriad of basic and applied research. The program involving the synthesis and study of nontraditional materials, such as organic polymers and organometallic materials, to serve as novel semiconductors, processable pre-ceramics, and nonlinear optical systems will continue to produce exciting and valuable results.

Established in 1981, the Materials Preparation Center (MPC) is a Dedicated User Facility sponsored by the Materials Sciences Branch of the Division of Basic Energy Sciences. The MPC is recognized throughout the worldwide research community for its unique capabilities in the preparation, purification, and characterization of rare-earth, alkaline-earth, and refractory metal materials, for preparing ultra high-purity and well-characterized metals, alloys, compounds, and single crystals. The Center makes these materials available to other DOE Laboratories, to other agencies, to universities, and to the private sector, and yearly satisfies hundreds of requests for customized materials and services that are unavailable from commercial suppliers and unmatched in quality anywhere else in the world.

The aforementioned activities are coupled with what is generally recognized to be the strongest solid-state synthesis program in the United States.

Business Results

Business Results Assessment Criteria

As discussed above, the science at the Laboratory is considered "Outstanding." This is reflected in the consistently favorable remarks it receives in the on-site peer reviews of its programs. The work is seen not only as being of top quality, but also unusually cost-effective. The high esteem in which the Laboratory is held is also evidenced in the number of repeat customers from industry and federal agencies entering into new or continuing existing Work for Others (WFO) agreements or CRADA's, and with the number of professional collaborations involving our scientists.

Summary

Areas of Excellence

From its inception, the Ames Laboratory has had a major focus on materials research. This continues in a broad-ranging set of programs. Major focus is on the synthesis or fabrication, characterization and processing of novel or high performance materials such as certain unique rare-earth materials of exceptional purity, alloys of novel composition, microcrystalline and nanocrystalline materials, quasicrystals, ceramic polymers, high T_c superconductors, photonic band-gap structures, fullerenes, light-emitting polymers and magneto-optic materials.

Scientists seek to obtain, and exploit, a fundamental understanding of materials: attributes such as ultrahigh temperature stability, corrosion resistance and lubrication properties. New routes to known bulk materials and surface coatings of strategic importance are also being pursued.

Because of its historic materials emphasis, the Laboratory also has developed outstanding programs in ancillary basic areas (e.g., catalysis). Of particular note are its highly regarded programs in analytical chemistry, which support and complement the materials efforts cited above through a wide variety of spectroscopic and separations techniques. These have recently been broadened to focus on environmental and molecular biological problems including the origin of chemical carcinogenesis, gene-mapping and DNA sequencing. For example, one of the studies within the Chemical and Biological Sciences Program is, to our knowledge, the only existing one to establish the nature of the tethered complex in an immobilized enantioselective catalyst and to provide an understanding of the inactivation of the catalyst upon exposure to air. In addition, a broad range of chemical and physical analytical techniques in the Laboratory have been applied to forensic science problems in support of DOE/FBI collaborative activities, the National Institute of Justice, and regional criminalistic laboratories.

Opportunities for Improvement

Ames' existing research programs can be augmented by the creation and or continued funding of the research initiatives that are addressed within the Laboratory's Institutional Plan and brought forth during the 2003 On-site review (See the Strategic Guidance, Oversight and Management section for a discussion on the initiatives). These initiatives build on core competencies of the Laboratory and its contractor, Iowa State University and for the latter, particularly in the biological and plant sciences. The partnership with ISU will significantly expand the Laboratory's core competencies and strengths in materials chemistry, metallurgy and ceramics, nondestructive evaluation, and condensed matter physics, as well as enabling Ames' to utilize the expertise within its Programs to further needed research within these emerging research fields to the benefit of the American public. Continued support of these and new initiatives is critical to the welfare of the Nation.

Self-Assessment Rating

Based upon the above discussion, the Laboratory's rating for Science Performance Measures is "Outstanding."

ENVIRONMENT, SAFETY AND HEALTH

OBJECTIVE 2.0: Ensure the safety and health of the public and the workforce, and protect the environment in all activities. The contractor shall make ES&H an integral and visible part of its work planning and execution process.

MEASURE 2.1: The contractor shall undertake process improvement efforts to strengthen its safety mechanisms (programs and practices).

EXPECTATION 2.1: The following actions shall be performed to support the improvement of the Laboratory's Integrated Safety Management System (ISMS).

1. Develop and complete implementation of a plan to address deficiencies or opportunities for improvement identified through the Environmental Management System (EMS) Review of the Laboratory's current environmental program.
2. Conduct a review of the Laboratory's fire protection systems' maintenance and inspection program.
3. Reduce the inventory of unutilized radioactive materials.
4. Review the Laboratory's use of personal protective equipment (PPE). Emphasis should be on the proper use of the PPE through observations during the Independent Walk-through.
5. Review the effectiveness of the Safety Coordinators Program. Emphasis should be placed on the Program Director/Department Manger involvement and support of the Safety Coordinators.

PERFORMANCE RATING:

<u>Performance Level</u>	<u>Performance Expectations</u>
Outstanding	All five actions completed.
Excellent	Four of the five actions completed.
Good	Three of the five actions completed.
Marginal	Two of the five actions completed.
Unsatisfactory	One of the five actions completed.

WEIGHT 2.1: 5%

YEAR-END RESULTS (by item number):

1. (Lead Specialist - Dan Kayser) The EMR Response Matrix was e-mailed to EPA Region VII on December 2, 2003. As stated in the e-mail, the majority of the matrix recommendations will be incorporated simultaneously into the Laboratory's ISMS. The key recommendation was to determine the Laboratory's "Environmental Aspects". Procedure 10200.075 was written to list, rank and establish objectives and targets for the Laboratory's environmental aspects. An EMS Steering Group was established to carryout this procedure. The group has listed and ranked the Laboratory's aspects. The next step for the group will be to recommend environmental objectives and targets to upper management; this should be completed by the end of January 2004. After the aspects related process is completed and the ISMS description is revised to reference all relative EMS policies and procedures, the Laboratory will self certify.
2. (Lead Specialist - G.P. Jones) The Ames Laboratory Fire Safety Committee conducted a review of compliance of the Fire Systems Testing/Maintenance/Inspection. Four

issues were identified, namely: (1) Fire Department Connections are to be inspected quarterly, previously monthly. (2) Hydraulic nameplate inspection is to be monthly, previously quarterly. (3) Inspection of fire doors as "free of storage" is to be added to the inspection criteria. (4) Fire dampers are to be inspected biennially. These changes and additions have been made to the computerized task list used by Facilities Services to direct routine service work. In addition, the annual assessment was made a monthly, a quarterly, and an annual task to determine compliance. Two minor issues were identified involving documentation.

3. (Lead Specialist - Jay Beckel) The Ames Laboratory radioactive materials inventory was significantly reduced during 2003. Successful off-site transfers included: 57 kg Normal U, 14 kg Depleted U, 36 kg Thorium, a 2.15 Ci AmLi sealed neutron source, a 1 Ci PuBe sealed neutron source, a 9 Ci Cs-137 sealed source, a 10 mCi Ra-226 sealed source, and a 3.45 mCi Cs-137 sealed source. The two largest sources were determined to be useful by other DOE efforts. The remaining sources and source material were disposed of after exhausting reuse pathways. Ames Laboratory's remaining inventory consists of 10 kg Normal U, 22 kg Depleted U, 1 kg Thorium, 87 g U-235, and small, < 25 mCi, amounts of activated metals, sealed sources, and check sources.
4. (Lead Specialist - Shawn Nelson) Eleven PPE concerns were identified during the Independent Walk-Through Program. PPE continues to be an emphasis of the Independent Walk-Throughs. The eleven concerns included issues such as damaged chemical and thermal gloves and dirty safety glasses, goggles and face shields. The evaluation, implementation and use of the new mechanic's gloves have been successful. The glove campaign along with the new mechanics gloves have contributed to the decrease in lacerations. A specific PPE Training Module was developed and presented to the Facilities Services Group excluding fall protection and respiratory protection (stand alone training modules). Training for non-Facilities Services workers is offered both via computer based training and classroom. As of December 31, 2003, 259 people have completed the PPE Training. Readiness Reviews continue to emphasize the communication of the requirements to users. The Personal Protective Equipment Needs Certification Form (Form 10200.095) is used to document the assessments. As a recommendation from a Program Director, wire bins were attached to the walls entering laboratories for the storage of safety glasses making them readily available when needed. The recommendation was well received by the Laboratory personnel.
5. (Lead Specialist - Jim Withers) The program was formally reviewed during November and December of 2003. A questionnaire was administered to assess the effectiveness of the program. Target audiences for the questionnaire include: Group/ Section Leaders, Program Director/Department Managers, Safety Coordinators and ESH&A Specialists. Program Directors/Department Managers gave a rating of 4.6 out of 5 (5=very effective) on "effectiveness of your Safety Coordinator assisting with ES&H issues". All Safety Coordinators responding to the questionnaire indicated that their training was adequate; the majority indicated that content of the twice yearly meetings was relevant and adequate. In general, questionnaire responses indicated a high level of satisfaction with the positions. Suggestions on areas of improvement will be evaluated in 2004.

A rating of "Outstanding" is given, as all actions were completed.

MEASURE 2.2: The contractor shall measure and improve performance in key areas to strengthen the Laboratory's Integrated Safety Management System (ISMS).

EXPECTATIONS 2.2: The following results shall be measured and utilized to assess and develop program and practice changes to improve and support the effectiveness of the Laboratory's Integrated Safety Management System (ISMS).

1. Percentage of completion rates of concerns from the Annual Independent Walk-throughs completed within sixty days of issuing the report is greater than 95%.
2. Completion rate of Emergency Awareness Training (EAT) shall be greater than the average of the previous four years.
3. Number of Topical Appraisals performed by ESH&A shall be greater than the average of the previous two years.
4. The number of concerns from the Annual Independent Walk-throughs in the category of "electrical" shall be less than the average of the previous four years.
5. Number of discrepancies in the category of "natural gas valve on" shall be less than the average of the previous four years.
6. Number of discrepancies in the category of "unsecured door to high value equipment" shall be less than the average of the previous four years.

PERFORMANCE RATING:

<u>Performance Level</u>	<u>Performance Expectations</u>
Outstanding	Process improvement achieved in all six categories.
Excellent	Process improvement achieved in five of the six categories.
Good	Process improvement achieved in four of the six categories.
Marginal	Process improvement achieved in three of the six categories.
Unsatisfactory	Process improvement achieved in two or less of the six categories.

WEIGHT 2.2: 5%

YEAR-END RESULTS (by Item number):

1. (Lead Specialist - Shawn Nelson). All (100%) of the concerns have been completed within the established time frames. Independent Walk-throughs have been performed for the following organizations: Environmental and Protection Sciences, Administrative Services, IPRT Offices, Human Resources, Accounting, Budget, Information Services, Occupational Medicine, Directors Offices, Industrial Outreach, Public Affairs, Graphics, Internal Auditor, Science & Technology Division Offices, Facilities Services, Engineering Services, ESH&A, Materials Chemistry, Metal & Ceramic Sciences and Materials Preparation Center, Applied Mathematics and Computational Sciences, Chemical and Biological Sciences, Condensed Matter Physics, and Property Management. One program has 68 moderate concerns due to be addressed January 30, 2004. It is anticipated, based of past performance, that all of these concerns will be addressed within the allotted time.
2. (Lead Specialist - Kate Sordelet) The average completion rate for EAT for the past four years is 90.1 %. Year-end results are 90.6 %, a completion rate slightly above the four-year average. Efforts to increase the completion rate of Emergency Awareness Training (EAT) will continue.
3. (Lead Specialist - Tom Wessels) The number of Topical Appraisals performed by ESH&A in 2001 and 2002 were six and ten respectively, for an average of eight. Eleven Topical Appraisals (listed below) were performed during 2003.

Ladder Safety	Nelson
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Eyewashes and Emergency Showers	Nelson
Confined Space Entry	Nelson
Waste Collection	Kayser
Hazardous Waste Bulking	Kayser
Select Biological Agents	Withers
Safety Coordinator Program	Withers
Human Subjects	Withers
Controlled Substances Research Practices	Jones
NFPA Signage	Jones
MC&A Review	Wessels

4. (Lead Specialist - Shawn Nelson) The average for the previous four years is 152 and there were 108 electrical concerns identified in 2003. Electrical Safety continues to be an emphasis of the walk-through program with the Laboratory Electrical Safety Inspector/Electrical Safety Committee Chair participating on every walk-through. Concerns have also decreased as a result of electrical emphasis during Readiness Reviews, classroom training and education from past walk-throughs.
5. (Lead Specialist - G. P. Jones) The average of the previous four years is 34.75. The total for the year in this category was 22, appreciably below the four-year average.
6. (Lead Specialist - G. P. Jones) The average of the previous four years is 543.75. The total for the year in this category was 256, appreciably below the four-year average.

A rating of "Outstanding" is given, as all actions were completed.

MEASURE 2.3: The contractor shall resolve ES&H related deficiencies in a timely fashion.

EXPECTATION 2.3: Complete Ames Laboratory ES&H and Occurrence Report related corrective actions (as designated and agreed to by Ames Laboratory and Ames Area Office) within the originally scheduled due date.

PERFORMANCE RATING:

<u>Performance Level</u>	<u>Performance Indicator</u>
Outstanding	96-100% completed as scheduled
Excellent	86-95% completed as scheduled
Good	76-85% completed as scheduled
Marginal	60-75% completed as scheduled
Unsatisfactory	Less than 60% completed as scheduled

WEIGHT 2.3: 5%

YEAR-END RESULTS: All of the ten (10) 2003 Occurrence Report related corrective actions were completed within the originally scheduled time period and no Occurrence Report Corrective Actions remained open as of December 31, 2003. Eighteen corrective actions are being tracked related to the EPA Environmental Management Review. Six of the actions were due within 2003 and four were completed before the scheduled date. Two were completed within one month of the original due date. Therefore 14 of 16 actions (87.5%) were completed within the original due dates for a performance level of "Excellent".

STRATEGIC GUIDANCE, OVERSIGHT AND MANAGEMENT

OBJECTIVE 3.0: ISU's and Ames Laboratory's Senior management proactively work together to identify new strategic areas for research and new areas for partnering that will both grow the Laboratory and help to maintain its core competencies well into the future.

MEASURE 3.1: ISU provides effective guidance and support providing the basis for Ames Laboratory to develop new strategic initiatives.

EXPECTATION 3.1: The Laboratory and ISU will develop a plan that outlines new initiatives that the Laboratory could engage in that support the DOE mission, maintain its core competencies and grow the Laboratory.

PERFORMANCE RATING:

<u>Performance Level</u>	<u>Performance Expectations</u>
Outstanding	Plan developed and submitted to DOE by July 1, 2003; or the Institutional Plan Meeting whichever comes first.
Excellent	Plan developed by August 1, 2003.
Good	Plan developed by October 1, 2003.
Marginal	Plan developed by December 1, 2003.
Unsatisfactory	No plan developed during the performance period.

WEIGHT 3.1: 10%

YEAR-END RESULTS: The on-site review in 2002 encouraged the Laboratory to develop two sorts of initiatives. One was to build upon core competencies that currently exist in the Ames Laboratory; the other was to couple the strengths of the Ames Laboratory in the physical sciences to the expertise that exists on the ISU campus in the biological sciences (in particular because of ISU's history as a land-grant university with strong programs in agriculture). These two directions are not totally consistent since the first focuses on expertise we currently have and the second focuses on expanding our pool of expertise. Because of this inconsistency, we decided to develop two initiatives: **Transformation Pathways in the Condensed State** and **Coupling Physical and Biological Sciences in the Ames Laboratory**.

The "transformation pathways" initiative builds on the traditional strengths of the Ames Laboratory in the materials sciences. It is a partnership comprising the Materials and Engineering Physics Program (Dr. Gleeson), the Condensed Matter Physics Program (Dr. Harmon) and the Materials Chemistry Program (Dr. Thiel). The initiative seeks to understand the fundamental physics and chemistry of *transformation pathways*, which in this context is understood to mean the routes to the structural evolution of materials involving pattern and composition arrays on different length scales. This subject is important in materials synthesis and processing for understanding the reactivity, stability and other important properties of materials. The approach is a synthesis of basic theory, computer modeling and experiment. This initiative is relatively straightforward since it involves getting our current researchers together to develop new directions which are relevant to DOE's mission and which answer important scientific questions. The initial idea was vetted in Germantown last summer and was presented to Dr. Orbach in the November 2003 on-site review. The Laboratory is in the final stages of putting together a four-part proposal that will be submitted to DOE for review (to Harriet Kung).

The second initiative seeks to “couple” Ames Laboratory strengths with those in ISU in the biological sciences (in particular, plants). This initiative actually consists of four sub-initiatives that are somewhat related but have been independently developed. The fact that there are four subparts is mainly a consequence of the fact that we are dealing with a diverse set of scientists across campus, in addition to Ames Laboratory researchers; it would have been almost impossible to pull them all together into one group.

The first of these four sub-initiatives was the **Plant Metabolomics Initiative**. This started life as the metabolomics facility, which was put forth in response to the BES call for DOE facilities for Dr. Orbach’s 20 year new facilities plan. It was in meetings to discuss these biology-related initiatives that the idea of a **Metabolomics Center** was born. Metabolomics and its companion fields, genomics and proteomics, form a progression of related disciplines. Genomics refers to understanding the gene structure of an organism. Proteomics is concerned with the structure and function of the proteins controlled by this structure, and metabolomics is the study of the various metabolites produced by the cell, i.e. the chemical output of the organism. Together, the three disciplines determine cause and effect in modern biology. The Ames Laboratory is in a unique position to bring to bear a number of instrumental techniques, as well as the scientific and technical expertise, to understand metabolomics in plants. The original idea was that the center would be a major DOE user facility for researchers across the country. On the basis of our facilities request, we were encouraged to put together a much more modest metabolomics proposal that emphasizes research at Ames Laboratory and not a facility. This proposal is now in the final stages of preparation and will soon be sent to DOE.

A second sub-initiative is called the **Initiative in Bioinspired Materials**. The goal is to make new manmade materials that mimic, in either structure or method of preparation, materials in nature. Here the emphasis is particularly on the various length scales of structures starting at the molecular level through to the macroscopic level. We are currently working on a document that to send to Washington at an appropriate level for review by BES but not to be sent out for formal review. The plan is to follow this up with a visit to Germantown and the formal submission of a proposal for review.

The third sub-initiative is called the **Single-Cell Biology Initiative**. As the name suggests, the purpose of the single-cell initiative is to develop analytical techniques that can be used to measure the accumulation of the chemical components of the cell to determine interactions among proteins and metabolites and to monitor the fluxes of these components in the functioning of the cell. In short, the goal is to understand the chemistry of the cell from studies at the single-cell level. A white-paper is being prepared to send to BES to introduce DOE to this research topic. Again, we plan to follow this up with a visit to Germantown for discussions followed by a formal submission of a proposal.

The fourth sub-initiative is called the **Initiative in Protein-Induced Structural Transformations of Bio-Membranes**. Membranes are universal functional components having remarkable material properties. They allow cells to carry out chemical and biological processes in compartments relatively insulated from the surroundings. Important events such as photosynthesis, ion pumping, and transport of metabolites, occur centrally in the membrane. Understanding the mechanical properties, 3-D structure and dynamics of membranes is crucial to a large number of biological problems and presents exciting challenges to materials scientists as well. The recent BESAC report on Bio-molecular Materials states “there is a need for functional materials to control transport across membranes”. The work proposed here will provide the scientific underpinning related to this need. The white paper for this initiative is being prepared and the process for submission, discussion and proposal submission will be followed as per above in the other sub-initiatives.

The final initiative which we are pursuing is a **Wind/Hydrogen** project. We are in discussion with the city of Ames to develop plans for this demonstration project/research facility. The basic idea is to use wind energy to produce hydrogen that can be stored and used (in fuel cells) to produce energy on demand, such as during times of peak load. The idea is to circumvent the most serious drawback of wind energy, which is that it is only available when the wind blows. Although there are many separate wind projects and hydrogen facilities in the country, we are unaware of any attempts to couple them together in the manner proposed.

As of July 1, 2003, two of the above initiatives are formally documented with one having been formally presented to DOE and the other awaiting a consensus time where Ames Laboratory management can meet with DOE to present the initiative.

On-Site Review

For each of the initiatives listed above (with exception of the Wind/Hydrogen project) an abbreviated white paper was prepared and sent to Dr. Orbach and his staff, which could be reviewed and discussed at the annual On-Site Review meeting which was held in November, 2003. The teams of principal investigators, that proposed the initiatives, attended the On-Site and conducted a panel discussion primarily with Dr. Orbach. This exchange was well received by Dr. Orbach and he provided positive feedback at the closeout regarding these initiatives. The Laboratory was encouraged to continue to develop these initiatives and to work closely with the PSOs in Headquarters to work out the rough edges and to come to a meeting of the minds where both DOE and the Laboratory could support the research.

Since the On-Site, additional meetings in HQ have occurred or are planned. Based on the meetings, some of the initiatives will result in full proposals while others may be tabled for now. In any case, we will continue in this process in CY2004 in the hopes of growing the Laboratory. These outcomes would place the Laboratory in the “Outstanding” category of the performance rating scale.

EXPECTATION 3.2: ISU and the Laboratory will develop a plan to share faculty and staff to the benefit of both institutions. The Laboratory Director will work with the University President, Provost and the Assistant Provost to identify openings that could be filled with split-appointees that would help grow the Laboratory and enhance core competencies, while supporting the mission of both institutions. The plans for expectation 3.1 and 3.2 of this section may be combined.

PERFORMANCE RATING:

<u>Performance Level</u>	<u>Performance Expectations</u>
Outstanding	Plan developed and submitted to DOE by July 1, 2003; or the Institutional Plan Meeting whichever comes first.
Excellent	Plan developed by August 1, 2003.
Good	Plan developed by October 1, 2003.
Marginal	Plan developed by December 1, 2003.
Unsatisfactory	No plan developed during the performance period.

WEIGHT 3.2: 5%

YEAR-END RESULTS: At the FY2002 on-site review, the Laboratory and the University were encouraged to promote the sharing of faculty in order to improve the capabilities of the Laboratory and at the same time attract high caliber staff to the University. Following the on-site meeting President Geoffroy, Provost Allen and Dr. Barton met to initiate a process to invigorate the sharing program that exists between the University and the Laboratory. As a part of the CY2003 performance plan, the Laboratory was asked to include sharing faculty and other staff in our planning process. To that end, the plans for new initiatives have relied heavily on the ability to matrix ISU faculty into the Ames Laboratory organization in order to develop and carry out these initiatives. Obviously, the metabolomics and other seed science initiatives depend heavily on a partnering between the Seed Sciences faculty and the Laboratory's Chemical and Biological Sciences program. These initiatives are too new to identify specific faculty and their roles in these initiatives, but the idea of sharing faculty is inherent in the success of these initiatives.

Those that are familiar with the Laboratory know that the sharing of faculty and staff has long been a practice for ISU and the Laboratory. Many of our PI's are also on the faculty of ISU. One recent successful example of this sharing arrangement is the hiring of Dr. Robert McQueeny. Dr. McQueeny comes to ISU from Los Alamos National Laboratory and has a background in neutron scattering. Dr. McQueeny is involved in the Spallation Neutron Source project and will work in Dr. Harmon's Condensed Matter Physics program. He will also teach classes in the Physics Department.

Another example, of the University and Laboratory working together to attract world-class resources, is the hiring of Dr. Dan Shechtman. Dr. Shechtman is known in the scientific community for his discovery of quasi-crystals. He is a fellow in the National Academy of Engineering and will provide a real boost to the resources we currently have at the Laboratory. In this case, the University has agreed to pay Dr. Shechtman's salary and the Laboratory has agreed to provide space and research support including a post-doc. The Laboratory, University and the DOE-HQ are very excited about this hire and are looking forward to Dr. Shechtman's work here.

Expectation 3.2 calls for a plan to be developed for splitting staff between the Laboratory and ISU. In addition to the sharing relationships that are presented in the new initiatives the practice of sharing already exists between ISU and the Laboratory as evidenced by our new staff members. Thus, the plans and the practice both existed as of July 1, 2003, earning the Laboratory an "Outstanding" for this performance measure.

Summary

As evidenced throughout the year the contractor has established the necessary processes and relationships to provide strategic guidance and leadership for the Laboratory and its mission. The initiatives that were identified above leverage resources that were developed on campus over a great deal of time. The expertise available for these initiatives comes from a forward-looking vision developed at the University. As DOE increases its interest in the plant sciences arena the natural conclusion drawn by the Contractor is that the University can help. These resources are world class in nature and can be matrixed into the Laboratory immediately. The new initiatives and the sharing of faculty go hand-in-hand and are examples of how the Laboratory can respond to the needs of DOE with relative ease. It is our hope that the new initiatives will be fruitful and develop into new projects for the DOE. Based on the discussions and conclusions above, it is our opinion that contractor's performance in the area of Strategic Guidance and Contractor Management is "Outstanding".

Systems Assessment (General Operations)

SCIENCE

System Indicators:

None.

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE Orders.

YEAR-END RESULTS:

Laboratory Productivity

System Measures:

1. Research to Support Ratio: 2.00
2. Percent Technical Labor on Research: 91%
3. Average Operating Cost per Research FTE: \$116K
4. Complementary Data:
 - (i) The number of hours used for the calculation of an FTE: 2080
 - (ii) List of functions and FTEs included in contract labor.
No contract labor is utilized.
 - (iii) List of program management pools and FTEs included in research.
Total FTEs included in research 213.3.
The only "program management pools" included in research are the Program Burdens.
All FTEs in the program burden accounts are considered research except the program administrators who are included in support labor.
 - (iv) The amount and kind of capital cost excluded in Success Indicator 2.
All capital and construction costs are excluded from that calculation.
 - (v) Any footnotes or explanations that would clarify unique circumstances associated with a given metric.
Ames Laboratory had no procurements greater than \$1M.
Ames does not have user facility utilities greater than \$1M.
Ames does not have major capital projects or major systems acquisitions.
Direct labor is defined as salary plus fringe benefits.
Technical labor is defined as: faculty, post-doctoral positions, professional and scientific positions, and graduate student labor.

Compliance Items:

None

Assessment Scope:

No material anomalies within the data.

ENVIRONMENT, SAFETY AND HEALTH

System Indicators:

OBJECTIVE: Conduct all work and manage all Laboratory facilities with distinction, fully integrated with the scientific and technology mission, while being protective of our workers, the public, and the environment.

MEASURE 1.1: Performance of ESH-required reviews and maintenance.

1. ES&H Topical Appraisals
2. Annual Independent Walk-throughs of Ames Laboratory Facilities
3. Readiness Review Process

Points will be earned in accordance with the following scale:

1. Each topical appraisal documented earns 1 point (Maximum 10 points).
2. All Ames Laboratory facilities inspected in calendar year 2003 (10 points). (All or nothing)
3. A list of current activities is sent to Group/Section leaders for review to ensure that no significant modifications have occurred (5 points); and performance of 5-year Readiness Reviews of existing activities earns:

>95%	(5 points)
85% to 95%	(4 points)
76% to 84%	(3 points)
≤75%	(0 points)

EXPECTATION 1.1:

<u>Performance Level</u>	<u>No. of requirements met</u>
Outstanding	>28
Excellent	28-25
Good	24-20
Marginal	<20

YEAR-END RESULTS (by item number):

1. Eleven (11) Topical Appraisals (listed below) were performed during 2003, therefore ten points should be awarded.

2003	Ladder Safety	Nelson
2003	Eyewashes and Emergency Showers	Nelson
2003	Confined Space Entry	Nelson
2003	Waste Collection	Kayser
2003	Hazardous Waste Bulking	Kayser
2003	Select Biological Agents	Withers
2003	Safety Coordinator Program	Withers
2003	Human Subjects	Withers
2003	Controlled Substances Research Practices	Jones
2003	NFPA Signage	Jones
2003	MC&A Review	Wessels

2. All spaces have been walked through that belong to Environmental and Protection Sciences, Administrative Services, IPRT, Human Resources, Accounting, Budget, Information Services, Occupational Medicine, Director Office, Deputy Director Office, Chief Operations Office, Industrial Outreach, Public Affairs, Graphics, Internal Auditor, Science & Technology Division Offices, Facilities Services, Engineering Services, ESH&A, Materials Chemistry, and Metal & Ceramic Sciences and Materials Preparation Center, Applied Mathematics and Computational Sciences, Chemical and Biological Sciences, Condensed Matter Physics and Property Management. Ten points should be awarded.
3. The Safety Review Committee (SRC) sent a current list of activities to Group/Section Leaders in March of 2003 with instruction to review their work versus the list of approved activities. All 5-year Readiness Reviews of existing activities scheduled for 2003 were completed on schedule. Ten points should be awarded.

All aspects of this measure were completed and thirty (30) points were earned. Therefore, an “Outstanding” performance level was achieved.

MEASURE 1.2: *Total Recordable Case Rate* – The number of all occupational illnesses and occupational injuries resulting in loss of consciousness, restriction of work or motion, transfer to another job, or require medical treatment beyond first aid x 200,000 (100 employees working 40 hours per week for 50 weeks per year) / the actual number of hours worked.

EXPECTATION 1.2: Contractor should demonstrate measured improvement from previous contract period through development of scaled metrics.

Total Recordable Case Rate for CY2003:

Outstanding	<2.0
Excellent	2.0-3.5
Good	>3.5-4.3
Marginal	>4.3-5.0
Unsatisfactory	>5.0

YEAR-END RESULTS: Two recordable cases were reported for the year with 652,098 hours reported, which calculates to a TRCR of 0.6. An “Outstanding” performance level was achieved.

MEASURE 1.3: Performance of ESH-required reviews and maintenance for the 19 analytical X-ray devices. These are stipulated by Procedure 10202.003, and include:

1. Protective barriers (10)
2. Up-to-date Readiness Reviews (10)
3. Training for all users (10)
4. ESH&A annual inspections (10)
5. ESG semi-annual safety checks (20)

Points will be earned in accordance with the following scale:

1. Protective barriers (10) – All barriers in place equates to 10 points; if any barrier is not in place zero points will be awarded;
2. Up-to-date Readiness Reviews (10) – Points achieved based on percent of Readiness Reviews up-to-date;

3. Training for all users (10) – Points achieved based on the percent of x-ray machines annually inspected by ESH&A; and
4. ESH&A annual inspections (10)
5. ESG semi-annual safety checks (20) – Points achieved based on percent of x-ray machines checked by ESG.

EXPECTATION 1.3:

<u>Performance Level</u>	<u>No. of requirements met*</u>
Outstanding	>55
Excellent	50-55
Good	40-49
Marginal	<40

*Points achieved based on 100% required Protective Barriers in place on operating x-ray devices. Points achieved based on percent completed or verified.

YEAR-END RESULTS (by item number):

1. All protective barriers are in place for those devices that are operational and require such. Ten points should be awarded.
2. All readiness reviews pertaining to x-ray devices are current. One readiness review is in the process of being updated due to a new type of camera being installed for an existing x-ray device. Ten points should be awarded.
3. All x-ray users are trained and have proper dosimetry. Training status is examined monthly by the Radiation Safety Officer and reviewed with the ESH&A Manager. Ten points should be awarded.
4. All annual inspections were completed in November of 2002 and 2003. Ten points should be awarded.
5. Engineering Services has provided ESH&A with a spreadsheet showing their inspection of the protective barriers on 5/16/02, 11/26/02, 5/26/03, and 11/26/03. Twenty points should be awarded.

All tasks required under Measure 1.3 were achieved and sixty (60) points were earned. An “Outstanding” performance level was achieved.

Compliance Items:

An ORPS, CH—AMES-AMES-2003-0001, Improper Management of Peroxide-forming Chemicals, was filed 2/7/03 as a result of an Inspector General (IG) office audit. Peroxide – forming and shock sensitive chemicals were stored past the expiration date. Corrective actions have been implemented and the occurrence report has been closed (4/15/03).

A Notice of Violation (NOV) was issued, by the Iowa Department of Natural Resources (IDNR), for missing information on a “Notification of Demolition and Renovation” form for asbestos removal. No corrective actions were required by the IDNR. For further details see occurrence report CH—AMES-AMES-2003-0002. This occurrence report has been closed (4/15/03).

ORPS CH--AMES-AMES-2003-0003 and NTS-CH--AMES-AMES-2003-0001 (“Sealed Source Documentation”) were created in response to a question raised by CH regarding the status of sources historically considered as sealed sources. Both were reported as Final on 12/05/2003.

Self-Assessment

Opportunities for Improvement Identified in 2002

The 2002 Self-Assessment Report noted several opportunities for improvements planned for calendar year 2003. The status of these planned improvements are noted as follows:

- Although the Health Physics Group has undergone many audits and associated changes in the past few years, there are still areas of improvement available. One improvement may be the implementation of a Health Physics homepage on the Ames Laboratory internal server. This page could be used by group leaders to verify inventory or currently trained staff in particular areas. It could provide links to other exemplar radiation safety sites, Iowa State University's radiation safety site, or possibly even online training or Health Physics staff orientation. The site may also provide an improved communication link between the researcher and the Health Physics staff via a question and answer form and/or a FAQ page.
Status: *The Radiation Safety Program web site will continually improve in an effort to allow researchers more direct access to program information and changes and training records. The site now contains contact information and links to specific documents that pertain to radiation safety.*
- Efforts to reduce the number of lacerations at the laboratory will continue with the implementation of new gloves, increased scrutiny of PPE Assessments, training and continued communication to Laboratory employees.
Status: *Three lacerations (1 OSHA Recordable) occurred during 2003. The new gloves have been observed being used with favorable feedback. The topic of lacerations continues to be emphasized in PPE Training, General Employee Training, Facilities Services Meetings, Readiness Reviews and Walk-Throughs.*
- The Industrial Hygienist will review the annual chemical inventories for usage of HF to ensure availability of calcium gluconate.
Status: *The 2003 Ames Laboratory Chemical Inventory was reviewed for HF. Locations of calcium gluconate gel were verified.*
- The documentation of the Emergency Door Card procedure will provide a means to measure compliance.
Status: *The Emergency Door Card procedure has been drafted and is ready for first review. The development and implementation of a procedure for identifying rental spaces has been accomplished.*
- The creation of a computer-based training module to duplicate Module AL-149 *Welding and Hot Work*, will allow easier access to the training.
Status: *The Subject Matter Expert conducted four training sessions to develop a feel for the needs of the attendees and to assess the scope needed. Then, the training module was developed as a PowerPoint presentation, and currently awaits voice recording and implementation.*
- The addition of an add-on section to Module AL-149, *Welding and Hot Work*, to address the additional information imparted to authorizers of Hot Work Permits will make the presentation uniform in future, and allow tracking for retraining purposes.
Status: *Development of a list of topics was drafted and the supervisor of the authorizing personnel was interviewed to ensure that the implementation of this add-on would*

achieve the necessary training targets and satisfy the need for documentation and tracking of the module. Then, the module was developed as a PowerPoint presentation and currently awaits voice recording and implementation.

- Undertake efforts to clean up and remove unused items from the Alpha and Waste Handling Facilities.
Status: *Excess equipment and materials have been removed from the Alpha and Waste Handling Facilities. ESH&A and Facility Services are working together to design a LLW storage and processing facility. The new facility will be located in an existing DOE owned building.*
- Identify and assess Ames Laboratory environmental aspects as part of the Laboratory's Environmental Management System (EMS).
Status: *Procedure 10200.75, Environmental Aspects Procedure was written to identify, list and rank the Laboratory's environmental aspects, and was completed by the EMS Steering Group in November 2003. The EMS steering Group will recommend objectives and targets to Ames Laboratory's Upper Management for significant aspects.*
- Evaluate the need to retain historical environmental samples and dispose as necessary.
Status: *It was determined that there was no need to retain historical environmental soil samples. Regulators have cleared all inactive waste sites. Final reports for these sites are on file. Samples were consolidated and packaged as low-level waste. Consolidated soil samples were sent to Hanford for disposal in August of 2003.*

Significant Changes:

Radiological Protection

The Health Physics program continued to undergo changes in 2003. The program has been consolidated primarily into one area for office space and one area for lab space, rather than spread out in four different locations. All radioactive source material, of accountable quantity, is kept in Health Physics possession and no research activities to utilize these materials are planned for the near future.

Harley Wilhelm Hall has undergone some remediation in 2003 and more areas are being further characterized for possible future remediation when direct funded resources become available. Recently, some radioactively contaminated drain lines were removed, the floor in a presently unused laboratory space has been characterized and actions are being considered to seal the basement floor in vacant laboratory space before the space is reused for research activities.

The Ames Laboratory Waste Handling Facility has been stripped of most unnecessary items and is currently only used for storage of the low-level waste destined for Hanford. The plan, in process, is to remodel a space on campus in a DOE-owned building for future use.

The Radiological Protection Program was reviewed as part of the OSHA audit and the NRC audit. The audit results indicate that Ames Laboratory has a compliant program and could operate within both OSHA and NRC oversight. The 2003 DOE Safeguards and Security Inspection included a review of the Materials Control and Accountability (MC&A) Program, no deficiencies were identified and the program was given a "Satisfactory" rating. Also, the ESH&A manager and the ISU RSO conducted an MC&A Program Topical Appraisal in December 2003. The appraisal did not discover deficiencies of the program's design or implementation, although a few opportunities for improvement were noted and related actions were initiated.

Harley Wilhelm Hall: Following the departure of Dr. Ng and prior to the remodeling of his spaces, a survey was done on the floors in his lab spaces since they were vacant. Surveys in the basement of Harley Wilhelm Hall, rooms 13-29, showed varying levels of fixed contamination on the floor, but mainly isolated in the cracks. There was no removable contamination found. Further surveys and coring of suspect areas showed that there is two distinct pours of concrete and the contamination filtered through the cracks of the top layer and deposited on the second layer, which had no cracks. Slices of the cores showed minimal migration of the Thorium into the 2nd layer of concrete, ~ 1/8". Future plans for the area include removing the contaminated floor drains, filling all cored holes with fresh concrete, and applying an epoxy floor coating to the entire surface. The epoxy coating will prevent erosion of the concrete surface, therefore preventing any chance of removable contamination in the future. Contamination levels will remain documented for future remodeling plans in the area.

Waste Handling Facility: The Ames Laboratory Waste Handling Facility, which is owned by Iowa State University, has been the site for several radioactive materials projects since it was built in the mid-1960s. It has served as a radioactive waste processing area for the Ames Laboratory Research Reactor, a decontamination facility for the Ames Laboratory Research Reactor, a waste processing and staging area for both Ames Laboratory and Iowa State University, and also an alpha research facility. The building is no longer necessary for current Ames Laboratory research or waste storage. Ames Laboratory has been working jointly with Iowa State University in an effort to return the site to Iowa State University. The University and the DOE both agree the building should be taken down and the land returned to grade. Ames Laboratory's Health Physics Group has initiated the planning process and the actual work of clearing the facility for demolition. All unnecessary materials and supplies kept at the facility have been removed and either reused or disposed of properly. Every effort is made to reuse all materials that can be used both on and off-site. Plans are to remove any potentially radioactive contaminated materials from the facility and then have a contractor complete the demolition in late CY2004 or spring CY2005 with a MARRSSIM study being conducted on the remaining land in spring/summer CY2005 to allow free release of the area back to Iowa State University.

Radioactive Materials Incidents: The source material inventory was greatly reduced by the disposal at the Hanford Solid Waste Disposal Site and redistribution of sources to other DOE facilities. Future efforts to further reduce inventories are focused on disposal or treatment/disposal of materials without identified disposal pathways.

There have been two instances of small, unaccountable, amounts of radioactive material found during lab clean out efforts in CY2003. The first was while a researcher was clearing his spaces for retirement and came across a small jar containing yellow powder. He suspected it might be radioactive and consulted with ESH&A. The material was surveyed and found to be a small quantity of Uranium. The second instance occurred when a researcher was going to reactivate an old microbalance and noticed a radioactive material sticker on the outside of the balance. He contacted ESH&A to survey and the material was assessed to be a small quantity of Depleted Uranium. It was investigated further and found that the material was used as a static elimination device for precise measurements. Both materials were placed under control of ESH&A, analyzed, and disposed of properly. In response to these issues, lab-wide notices were sent out to remind staff that unknown materials should be checked out by ESH&A before transfer or disposal. Identifying characteristics of common radioactive materials were communicated to aid personnel with identification.

Annual x-ray audits: The annual x-ray audits were conducted earlier than usual this year in preparation for the OSHA review of Ames Laboratory. There were no non-compliance issues found during the audits. The annual x-ray audits consist of checking personnel knowledge, log books, procedures, operation of the x-ray system warning lights, and a leakage and scatter

survey of the system if operational at the time of review. Each laboratory is also walked through on a quarterly basis by the RSO, and additionally on an annual basis by the Ames Laboratory Independent Walk Through Team.

OSHA audit: In early September, OSHA was on-site to review Ames Laboratory practices and procedures to determine the ability for external regulation of DOE activities. The OSHA team consisted of one radiological professional and he toured all radiological areas at Ames Laboratory with the RSO and a Senior Health Physics Technician. Overall the radiation safety program received a 'phenomenal' rating. There was a noted good practice and a couple of recommendations that the program will take into account for possible opportunities for improvement.

NRC audit: In early December, the NRC was on-site for the external regulations review. An NRC inspector from Region V toured the facility with the RSO, the Ames Area Office Facility Representative, the ISU RSO, an Observer from IDPH, and the ESH&A manager. NRC identified six action items, five generic items and one Lab specific item. The estimated cost to address the six action items is \$ 85,000, the cost for the five generic items is estimated at \$ 35,000, and the Lab specific item is estimated to cost \$50,000. The Laboratory's program was not found to be deficient in respect to protection programs.

Safeguards and Security Inspection: In August, DOE Chicago's Safeguards and Securities program was on-site to review the materials control and accountability program, including internal record keeping and accounting practices, along with the security of materials kept on-site. No deficiencies were identified and the program was given a "Satisfactory" rating.

Disposal of materials and lead wall: As radioactive materials research has dwindled over the years, Ames Laboratory has been trying to reduce the amount of unused radioactive material kept on-site. 2003 marked a major improvement in this respect with the successful disposal of 56/66 kg normal Uranium, 14/36 kg depleted Uranium, 36/37 kg Thorium, and a 1 Curie Plutonium/Beryllium sealed neutron source. The Laboratory also successfully transferred a 9 Curie Cs-137 sealed source and a 2.15 Curie Americium / Lithium sealed neutron source to Argonne National Laboratory West. These sources will be used in other DOE research activities.

The Ames Laboratory Waste Handling Facility was home to an 8000 lb. lead wall that was no longer used. This wall was successfully transferred to Michigan State University for use as shielding at their new cyclotron facility.

Topical Appraisal of MC&A Program: In December 2003, the ESH&A manager and the ISU RSO conducted a review of the Laboratory's MC&A program. The appraisal included a review of the Materials Control and Accountability Program Plan (Plan 10202.002), a review of selected quarterly material balance reports, a review of selected inventory reports, a demonstration of security controls and observation of materials storage in B53 Spedding Hall. The review did not discover deficiencies of the program's design or implementation. Several suggested opportunities for improvement surfaced during discussions among the reviewers and the Laboratory's RSO. These opportunities are summarized as:

1. Plan 10202.002, *Materials Control and Accountability Program Plan* should be updated to reflect the latest directives after these directives have been listed in the Ames Laboratory Contract.
2. Documentation, including the performance of annual inventories, the calibration of scales, the issuance of quarterly reports, and the completion of transaction reports should be accompanied by a memo to file in order to provide additional information.

Electronic copies of MC&A databases, reports and documents (except Plan 10202.002) should be kept in a designated location, as should signed hard copies.

3. Reminders should be developed and entered into ALCATS to track the performance of annual activities, including calibration of scales and physical inventories.
4. A key to B53 Spedding should be encapsulated and kept by Plant Protection Section for emergency access.

Industrial Hygiene

There were significant changes in the Laboratory's chemical management system in 2003. Most notably, the purchase, use and disposal of peroxide-forming/shock sensitive chemicals were evaluated. A tracking mechanism was established to ensure that time-sensitive materials were disposed of or tested within recommended time frames. A quarterly inspection schedule was implemented to assure adequate identification and disposal/testing of these materials. Finally, a site-wide document was jointly prepared by ISU Environmental Health and Safety (EH&S) and Ames Laboratory Environment, Safety, Health and Assurance (ESH&A) that discusses proper management of peroxide-forming/shock sensitive chemicals.

The Laboratory's Laser Safety Program was reviewed in 2003 in response to a DOE initiative. Programmatic documentation was updated, training and medical records were verified and work began with ISU EH&S staff on a site-wide, web-based laser safety refresher module. Additionally, the Laboratory's inventory of 3b and 4 lasers and Laser Hazard Assessment files were reviewed and updated.

Three topical appraisals were conducted in 2003 of issues under the purview of the Industrial Hygiene Program. A summary is as follows:

- 1) **HUMAN SUBJECTS** - Ames Laboratory has one researcher (Dr. Ed Yeung) that utilizes human subjects as a part of DOE-funded research. The Department of Health & Human Services (DHHS) and the Food & Drug Administration (FDA) have regulations that govern research involving human subjects. The Industrial Hygienist is the principle point-of-contact for this topical area and has completed the DOE-mandated, on-line training from the University of Miami. Dr. Yeung has also completed this training.
- 2) **SELECT BIOLOGICAL AGENT** - Since the September 11th terrorist attacks, there has been a dramatic increase in interest in biological agents as potential terrorist weapons. This increase was further fueled by the cases of anthrax contamination that occurred in October 2001. A review of Ames Laboratory research revealed that select biological agents are not currently in use at Ames Laboratory. However, biological agents are used by a number of Ames Laboratory researchers (Drs. Yeung, Hoffman, Harmon, Baldwin). Readiness Review is the mechanism by which future use of any of these agents will be scrutinized.
- 3) **SAFETY COORDINATOR & REPRESENTATIVE PROGRAM** – The topical appraisal of this program included: updating of the list of current Coordinators & Reps, updating of programmatic documentation, review of training records with subsequent notification of employees still “pending” for training and the administration of questionnaires to assess the effectiveness of the program. Questionnaire results indicate the program is functioning well. A high level of satisfaction was indicated by Program Directors and Department Managers, Group and Section Leaders, Safety Coordinators and ESH&A

Specialist. A suggestion for a training module on hazardous materials chemistry is being evaluated.

Industrial Safety

The Industrial Safety Program performed the following actions during 2003:

1. Developed Personal Protective Equipment Training module specific to the activities that Facilities Services perform.
2. Developed a new training module for stair towers (scissors lifts) for Facilities Services.
3. Monitored the relocation of a major program (Dr. Yeung's Group) to a new facility. Ensuring waste was disposed of properly, equipment moves performed in a safe manner, reviewed new location for potential concerns, etc.
4. With overlap of researchers performing work for both DOE, the Institute for Physical Research and Technology and Iowa State University, the Industrial Safety Specialist was requested to perform a safety walk-through of non-DOE space at the Center for Sustainable Environmental Technology located in Nevada, Iowa. A few concerns were noted and corrected immediately.
5. Installed wire bins stocked with safety glasses at the entrances to the laboratories to ensure they are readily available when needed for both group members and visitors. The bins are required to maintain an adequate supply of safety glasses as they are dispensed.
6. Arc / Flash Protection Analysis (Ground Fault / Flash Hazard) for Electrical Workers was performed to meet NFPA 70E requirements. Wilhelm Hall, Spedding Hall and the Technical & Administrative Services Facility (TASF) are complete with the Metals Development (MD) Building in process. Metals Development Building was not included in this initial analysis as the electrical systems are currently being upgraded. When the upgrades are complete, an additional analysis will be performed. The recommendations for Wilhelm Hall and Spedding Hall are as follows:
 - The analysis indicated that no individual branch circuit panels have a short circuit greater than 10,000A (the minimum rating for a panel). All panels will be able to tolerate the available fault currents. Therefore, no corrective steps need to be taken. Distribution panels/switches have higher current, but the levels are still below the short circuit rating of the equipment.
 - The incident energy available at each calculated location is less than 1.2 cal/cm² (Risk Hazard Category 0). This requires personnel to simply wear untreated cotton clothing. Refer to Appendix B of the report.

The recommendations for TASF are as follows:

- The analysis indicated that no individual branch circuit panels have a short circuit greater than 10,000A (the minimum rating for a panel). All panels will be able to tolerate the available fault currents. Therefore, no corrective steps need to be taken. Distribution panels / switches also have short circuit currents below 10,000A.
 - The incident energy available at each calculated location is less than 1.2 cal/cm² (Risk Hazard Category 0). This requires personnel to simply wear untreated cotton clothing. Refer to Appendix B of the report.
7. Three Topical Appraisals were performed in 2003 to date (Ladder Program and Eyewashes and Emergency Showers and Confined Space Entry).
 - Ladder Safety Program - An inconsistency was observed in the ESH&A Program Manual pertaining to the annual inspection of ladders. The manual indicated that Facilities Services performs the inspection of all ladders and mobile stairs, which is false. Facilities Services does not inspect the ladders belonging to the research

groups (inspected by the Industrial Safety Specialist). The next revision of the ESH&A Program Manual will correct this situation. The Industrial Safety Specialist performs the inspections of ladders belonging to the research groups, administrative services, etc.

- Eyewashes and Emergency Showers - New spaces leased to Ames Laboratory from ISU have been added to the inspection list. Spaces no longer leased to Ames Laboratory have been removed. This was brought to the attention of the Chair of the ISU Chemistry department.
- Confined Space Entry Program – A review of the permit space program using the canceled entry permits retained within one year after each entry was performed. No concerns noted. The training database was reviewed with 100% compliance (no pending & no retrain). The multi-gas gas monitors are calibrated on a monthly basis with no concerns. Two additional confined spaces were identified during the year (an inspection port for the air conditioning duct at 282 Metals Development and a pipe chase at the Waste Handling Facility. According to FSG, the inspection port has never needed to be entered nor will it for any foreseeable reason in the future. The pipe chase as a result of the D&D work being performed was recently identified, evaluated and entered. The WHF pipe chase cover was removed to perform the D&D work. Prior to removing the cover it was believed to be only large enough to slide a pipe in and had not been entered according to Senior Health Physics Technician. Both spaces were evaluated, placarded and added to the CSE inventory.
- Within each Topical Appraisal, the following were reviewed, edited or added if missing:
 - Review of the written program in the ESH&A Program Manual.
 - Review and updating the training programs (lesson plans, handouts, presentations, multi-media, etc.).
 - Review the findings from the Corrective Action 5 Tracking software utilized for the Independent Walk-Through Program. Analyzed for trends and corrective actions implemented appropriately.
 - Review of Training Needs Questionnaire (if applicable) to ensure that personnel are being identified correctly for training compliance.
 - Review Training Status (if applicable) from the Ames Laboratory Training Records System (ALTRS).

Fire Protection

The Fire Safety Committee (FSC) developed and implemented the following changes:

- An assessment for compliance with the requirements for Fire Suppression System Testing/Maintenance/Inspection was conducted by the Fire Safety Committee, with two documentation issues and two testing requirements being identified as deficient. The Annual Assessment of the Annual Fire System testing and maintenance scheduling was conducted in December 2003. Three routines were chosen for evaluation; an Annual, a Quarterly and a Monthly routine. All were found to be within the criteria established by the appropriate NFPA Code, though two documentation issues were discovered. Improvements in task identification and documentation were proposed and made to two of the routines.
- A formal inspection and documentation of the sprinkler systems was conducted by members of Plant Protection Section in CY2003, as required by NFPA 25. The next scheduled inspection is in September 2004. Results are forwarded to Facilities Services for corrective action and document archiving.
- The fire safety officer continued to perform inspections of Hot Work Areas during Independent Walk-throughs in CY2003. Sites where routine hot work is conducted are

assessed for compliance with hot work safety procedures. The observations are also used to identify locations of hot work that may have been missed during the initial inventory. These actions provide assurance of compliance with hot work requirements.

- The formal Hot Work Program was continued during CY2003. Permits are completed and left with the Plant Protection Section prior to initiating the hot work. Records are retained for one year for auditing purposes.
- Fire extinguisher testing, inspection and maintenance was conducted by members of the Plant Protection Section, as required by NFPA 10. This is an on-going effort, with tasks scheduled throughout the year to provide a balanced workload and adequate extinguisher coverage continuously.
- NFPA 704 postings for rooms containing chemicals were updated during the year. This is an on-going effort by members of the Plant Protection Section, with the task scheduled to commence after the annual chemical inventory is compiled.

Environmental/Waste Management

The Environmental/Waste Program performed the following items in 2003:

- The Asbestos Notification Procedure (10200.074) was developed.
- LLW is being collected and stored on campus in room 56A Spedding Hall.
- The hazardous Waste Pick-up Procedure (10200.055) was updated to include peroxide forming chemicals.
- Four hazardous waste shipments were made in FY2003.
- The 2002 Annual Site Environmental Report was approved by DOE-CH and posted on the Laboratory's web page.
- Continued to work with the Health Physics Group and outside vendors for the disposal of LLW that cannot go to Hanford.
- The Waste Management Contingency Plan (10200.017), Hazard Identification for Excess Property & Materials (10200.054) and the Waste Management Program Manual (10200.003) have been updated.
- Twelve containers of LLW were verified, by Hanford personnel, and shipped for burial in August 2003.
- ESH&A, in conjunction with ISU, is putting "Think at the Sink" labels near sinks throughout DOE buildings to remind employees/students not to pour chemicals down the drain.
- Due to an interpretation of EPA regulations (40 CFR 262) and to distinguish who (Ames Laboratory vs. ISU) picks up waste in buildings that are from different funding sources the management of waste was determined to be the responsibility of the building owner regardless of funding.
- A new flammable storage cabinet was purchased to store waste solvents.
- Used oil containment platforms were purchased. They provide a lower profile for ease of moving drums and can be reconfigured if necessary.
- Used oil is bulked in the Laboratory's 90-day storage area in 30-gallon drums. As each drum is filled, it is moved to the warehouse and placed on containment platforms until enough volume is accumulated for shipment to the recycler.
- Work towards incorporating EMS criteria into the Laboratory's ISMS continued with the listing and ranking the Laboratory's environmental aspects.

Review waste generation types, including any mitigating factors:

The following summary information characterizes the Ames Laboratory Waste Management activities:

- Approximately 10.0 cubic meters of LLW was shipped to Hanford for disposal in August 2003.
- RCRA waste volumes for 2003 dropped to 2,628 kg as compared to 3,735 kg in 2002.
- Approximately 3563 kg of asbestos containing material was generated from renovation activities. Asbestos is disposed at a permitted landfill.
- Four shipments of RCRA/TSCA waste in FY2003 averaged \$4,554/shipment as compared to four shipments of RCRA/TSCA waste in FY2002, which averaged \$6,043/shipment.

Review results of Ames Laboratory Assessments relating to waste management:

Improper storage and labeling of hazardous waste containers continue to be a minor problem in laboratories. These waste management issues were found during program walkthroughs and observations during routine waste pick-ups. Findings are being tracked in ALCATS and will be analyzed and evaluated for corrective actions as necessary. Program/Group Leaders are notified of these findings and are asked to correct the problems.

Two topical appraisals were done in 2003. The first appraisal was done on the Hazardous Waste Pick-up Procedure. There were no major deficiencies, however, the procedure was revised to include the safe handling of potentially explosive chemicals (PECs). The second appraisal reviewed Hazardous Waste Bulking operations. Upon review, it was determined that the necessary procedures, documentation and safety controls are in place. There was one minor discrepancy in the waste profile that was corrected by resubmitting a corrected profile to the Laboratories hazardous waste vendor.

Review effectiveness of Pollution Prevention/Waste Minimization Program:

The following materials were recycled in FY2003 and were reported to DOE through the 2003 Annual Report on Waste Generation and Pollution Prevention Progress as required by DOE Order 5400.1.

- 19.0 metric tons of white paper were recycled. All offices have white paper recycling receptacles.
- One metric ton of phone books were recycled. Phone books are collected annually through the Ames Laboratory storeroom. Laboratory employees are reminded via announcements and signage when and where to recycle their old phone books.
- 975 cubic feet of Styrofoam peanuts were recycled. Peanuts are recycled (reused) by the Materials Handling Group.
- 20.50 metric tons of iron were recycled. Scrap metal is collected and sent to a metals recycler.
- 0.15 metric tons of toner cartridges were recycled. The storeroom is in the process of depleting the remaining supply of virgin toner cartridges. After these are gone the storeroom will only stock recycled toner cartridges for the most widely used cartridges. Employees are required, to purchase recycled cartridges unless they have an acceptable reason.
- 1.84 metric tons of batteries were collected for recycling. Lead acid, NiCad, alkaline, lithium and mercury batteries are collected and sent for recycling.
- Approximately 1.5 metric tons of lead was recycled.
- Approximately 5.0 metric tons of CRT's and other computer components were sent to a recycler.
- Genuine and effective efforts are made by Ames Laboratory employees to recycle whenever possible. Because of employee efforts and management commitments, the Laboratory's Pollution Prevention/Waste Minimization Program is highly effective.

Trend Analysis

Trend Analysis is used to determine common occurrences or prevailing events that should be addressed/corrected with increased inspections, training, procedures, policies, etc. 1999 to 2003 data from the following sources were reviewed for trend analysis:

- Independent Walk-Through Findings
- Employee Safety and Security Concerns
- Injury/Illness Data
- Events
 - ❑ Occurrence Reports
 - ❑ Noncompliance Tracking System (NTS)
 - ❑ Incidents of Security Concern
 - ❑ Ames Local –Ames Laboratory Corrective Action Tracking System-ALCATS
 - ❑ Discrepancy Reports

Independent Walk-Through Findings

Categories	1999	2000	2001	2002	4-Year Average	2003	% Change from 4-Year Average
Administrative Controls	0	6	1	1	2	0	Decrease
Compressed Gases	29	11	15	7	15.5	14	10% Decrease
Confined Space Entry	11	0	0	0	2.75	1	64% Decrease
Electrical Safety	211	153	131	112	151.75	108	29% Decrease
Emergency Planning	17	12	23	7	14.75	2	87% Decrease
Environmental	10	38	32	27	26.75	20	25% Decrease
Fire Safety	55	48	25	11	34.75	9	74% Decrease
General Safety	87	109	94	49	84.75	43	49% Decrease
Hoisting & Rigging	5	0	1	2	2	0	Decrease
Hazard Communication	18	20	16	1	13.75	2	85.5% Decrease
Industrial Hygiene	28	57	59	19	40.75	33	19% Decrease
Infrastructure	3	0	2	2	1.75	1	43% Decrease
Ladder and Stair Safety	2	7	1	2	3	0	Decrease
Laser Safety	3	5	2	1	2.75	0	Decrease
Life Safety Code	2	12	5	6	6.25	5	20% Decrease
Lockout/Tagout	0	0	1	0	.25	1	400% Increase
Machine Guarding	10	7	5	6	7	4	43% Decrease
Personal Protective Equip (PPE)	1	7	7	7	7.25	11	34% Increase
Plumbing	1	0	2	0	.75	0	Decrease
Procedural	1	1	0	0	.5	0	Decrease
Property Management	9	14	5	0	7	7	SAME
Radiation Protection	0	5	0	4	2.25	1	56% Decrease
Respiratory Protection	2	5	5	0	3	1	67% Decrease
Training	0	1	0	0	.25	0	Decrease
Total	505	518	434	265	430	248	42% Decrease

Employee Safety and Security Concerns

Injury and Illness Data

Categories	1999	2000	2001	2002	4-Year Average	2003	% Change from 4-Year Average
Administrative				1	.25		Decrease
Chemical Spills		3		3	1.5	2	25% Increase
Fire Safety	5			2	1.75	2	12% Increase
General Safety	3	1	4	4	3	4	25% Increase
Security	1		2	1	1		Decrease
Industrial Hygiene	6				1.5	2	25% Increase
Environmental			2	2	1	2	100% Increase
Security						1	Increase
Radiological	1				.25		Decrease
Training	1				.25		Decrease
Traffic Safety	1				.25		Decrease
Property Management				1	.25	1	400% Increase
Odors	7	1	2		2.5	2	20% Decrease
Total	25	5	10	14	13.5	16	16% Increase

Type of Injury/Illness	1999	2000	2001	2002	4-Year Average	2003	% Change from 4-Year Average
Contusion / Abrasions	3		2 (1)	1	1.5	2	25% Increase
Burn	3 (1)	4 (4)	3 (3)		2.5		Decrease
Chemical Exposure			1		.25		Decrease
Eye Injury	3 (2)	2 (1)	1		1.5		Decrease
Fracture			1 (1)		.25		Decrease
Laceration	6 (3)	4 (4)	8 (6)	4 (4)	5.5 (4.25)	3(1)	45% Decrease
Puncture	1		1		.5		Decrease
Acute Musculoskeletal Injury	3 (3)	2	1	5 (3)	2.75	1(1)	64% Decrease
Cumulative Trauma Disorder	2 (2)	2 (2)			1.0		Decrease
Miscellaneous:							
Blister W/Cellulitis /RT Knee	1 (1)				.25		Decrease
Subungual Hematoma			1		.25	1	400% Increase
Respiratory Irritant			1 (1)		.25		Decrease
Head Trauma				1	.25		Decrease
Avulsion						2	Increase
Knee (joint popping)						1	Increase
Total	22	14	20	11	16.75	10	40% Decrease
Total OSHA Recordable	12	11	12	7	10.5	2	81% Decrease
Total Non-OSHA Recordable	10	3	8	4	6.25	8	22% Increase
Lost Work Days (LWD)	292	0	9	1	75.5	4	95% Decrease
Restricted Work Days (RWD)	63	7	28	0	24.5	0	Decrease
Total of LWD and RWD	355	7	37	1	100	4	96% Decrease
Days Away from Work Case Rate (LWDR)	5.3	2.3	11.70	0.32	4.9	0	Decrease
Lost Workday Case Rate (LWCR)	1.2	.3	1.3	0.32	.78	.31	60% Decrease
Total OSHA Recordable Case Rate (TRCR)	3.2	3.5	3.80	2.25	3.1	.61	80% Decrease
DOE Cost Index	4.92	3.96	6.98	1.30	4.29		

() Parenthetical numbers represent OSHA Recordable Injuries.

Events

Categories	1999	2000	2001	2002	4-Year Average	2003	% Change from 4-Year Average
Occurrence Reports	6	2	3	2	3.25	3	8% Decrease
Noncompliance Tracking System	1	1	1	0	.75	1	25% Increase
Incidents of Security Concern	0	0	0	0	0	0	0
Ames Local	2	4	5	6	4.25	3	29% Decrease
Total	9	7	5	10	7.75	7	10% Decrease

Year	Type	Identification	Title	Description
1999	ORPS	CH--AMES-AMES-1999-0001	<i>EPA Notice of Violation</i>	Findings of an EPA inspection in January 1999.
1999	ORPS	CH--AMES-AMES-1999-0002	<i>Violation of Postings and Procedures</i>	An ISU sub-contractor entered a space in violation of both a Radiation Work Permit and a Confined Space Entry Permit.
1999	ORPS	CH--AMES-AMES-1999-0003	<i>Violation of Procedures</i>	Violation of a Confined Space Entry by a research group during the disassembly of a large container. A permit was not completed, monitoring was not performed and personnel had not had CSE training.
1999	ORPS	CH--AMES-AMES-1999-0004	<i>Subcontractor did not adhere to MSDS Information</i>	The use of an air hose to clean up fine powder during a pipe insulation process, and the subsequent activation of a smoke detector
1999	ORPS	CH--AMES-AMES-1999-0005	<i>X-Ray Interlock Systems Inspection Deficiency</i>	A lapse in the Interlock Inspection program for X-ray machines.
1999	ORPS	CH--AMES-AMES-1999-0006	<i>Radiation Protection Program Deficiencies</i>	Deficiencies discovered in the Program documents. Refer to NTS-CH--AMES-AMES-1999-0001, <i>Incomplete Radiation Protection Program Plan Documentation.</i>
1999	NTS	NTS-CH--AMES-AMES-1999-0001	<i>Incomplete Rad Protection Program Plan Documentation</i>	Deficiencies discovered in the Program documents. An audit schedule was developed and initiated to assure completion.
1999	Local	AMES Local (99-001)	<i>HWH Tunnel RWP Violation</i>	RWP has lapsed; same PPE and protocol used, characterization of area took longer; same staff doing entry would do evaluation. For changes / re-issue
1999	Local	AMES Local (99-002)	<i>HWH Sprinkler Activation</i>	During acceptance testing of new generator, temperature near exhaust system activated one sprinkler head.
2000	ORPS	CH--AMES-AMES-2000-0001	<i>Internal Audit of Rad Protection Program Reveals Deficiencies</i>	Lapses in the dose reporting, posting and survey records programs. Please refer to NTS-CH--AMES-AMES-2000-001
2000	ORPS	CH--AMES-AMES-2000-0002	<i>X-ray Shutter Stuck Open</i>	Failure of an X-ray shutter to close properly. This report is Final.
2000	NTS	NTS-CH--AMES-AMES-2000-0001	<i>Internal Audit of Rad Protection Program Reveals Deficiencies</i>	Lapses in the dose reporting, posting and survey records programs. Please refer to CH--AMES-AMES-2000-001
2000	Local	AMES Local (00-001)	<i>GERT Training Issues</i>	10CFR835 requires 2 year retraining, but AL RPP doesn't Called M. Saar, J Drago – not reportable; change RPP, assure training current as of 2/28/00
2000	Local	AMES Local (00-002)	<i>HF System Leak in 147 Metals Development Hood</i>	Stainless Steel fitting corroded through, releasing HF gas into hood; system fail-safe shut down.
2000	Local	AMES Local (00-003)	<i>Legacy Contamination found; No RWP</i>	Section of keriduct removed in Spedding; found to be contaminated, decontaminated duct; work done without RWP.
2000	Local	AMES Local (00-004)	<i>A cardboard Box Fire, B55 Spedding</i>	A cardboard box of stored waste caught fire after 2 months of storage. 1 side, top burned out, melting light fixture.
2001	ORPS	CH - -AMES - AMES-2001-0001	<i>Violation of DOT Regulations.</i>	Rad Material shifted during shipment

Year	Type	Identification	Title	Description
2001	ORPS	CH - - AMES – AMES –2001-0002	<i>Materials Inventory Discrepancy.</i>	Math error discovered- created discrepancy
2001	ORPS	CH - -AMES – AMES-2001-0003	<i>Hydrofluoric Acid Exposure.</i>	Exposure of one employee to HF during the change-out of a cylinder in the MD hdroflurination facility.
2001	NTS	NTS-CH—AMES- AMES-2001-0001	<i>Quality Assurance Program Plan Overdue.</i>	Applicability determined after due date
2001	Local	AMES Local (01-001)	<i>Wall Cabinet Fell</i>	Wooden wall cabinet in Physics Addition fell from wall; water exposure rotted supports; fell at night, no one present.
2001	Local	AMES Local (01-002)	<i>Rad Sample Shipment to ANL</i>	Researcher with joint appointment at Ames Laboratory and Argonne National Laboratory shipped samples to himself at Argonne.
2001	Local	AMES Local (01-003)	<i>Waste Handling Facility Contamination</i>	During hood removal, and under a RWP, a contaminated spot was found that reached the “hold point” ; new RWP issued, area deconned.
2001	Local	AMES Local (01-004)	<i>5 Opportunities for Improvement from RP Audit</i>	5 Opportunities for Improvement by P. Neeson during 2001 Audit of RP; did not adversely affect NTS-1999-0001 (Ames Rad Protection Audit 026-030).
2001	Local	AMES Local (01-005)	<i>Padlock cut in Physics Addition</i>	Padlock cut off desk drawer containing depleted uranium samples; nothing missing from inventory
2002	ORPS	CH - -AMES – AMES-2002-0001	<i>Notice of Violation</i>	Asbestos Abatement Notifications were not sent to IaDNR with 10 working days’ lead-time
2002	ORPS	CH- -AMES – AMES –2002-0002	<i>Improper Comp. Gas Practices Result in Transportation Incident & Exposure</i>	Researcher mixes gases back into cylinders
2002	LOCAL	AMES Local (02-001)	<i>Mercury Diffusion Pump Leaks</i>	A mercury diff. Pump broke in 347 SPH- cleaned up- air samples show no exposure above ACGIH TWA
2002	LOCAL	AMES Local (02-002)	<i>Dosimetry annual reports</i>	Not all the annual reports for the individuals were received from the vendor before the internal audit. A discussion by the Events Categorization and Investigation Team was undertaken before the close of the Internal Audit and it was decided that a decision would be rendered after receipt of the final Internal Audit report.
2002	LOCAL	AMES Local (02-003)	<i>X-ray system shutter</i>	X-ray shutter stuck open- may be due to corrosion from a cooling water leak- all safety systems functioned as designed
2002	LOCAL	AMES Local (02-004)	<i>CWH Oil Leak</i>	Diffusion pump disposed of in scrap dumpster- oil leaked to asphalt lot, not to soil or sewer. Cleaned up- pump taken back to CWH
2002	LOCAL	AMES Local (02-005)	Evidence of forced entry	Evidence of a forced entry to 101 Wilhelm Hall was discovered on 10-6-02 by PPS staff during performance of a tour.
2002	LOCAL	AMES Local (02-006)	Mercury thermometer break	Hg Thermometer broke in 180 DEV
2002	LOCAL	AMES Local (02-007)	Intrusion to Unclassified Computer	A cluster job controller was found to have a vulnerability - limited to system passwords for a few people.
2002	LOCAL	AMES Local (02-008)	Quality Assurance Plan outdated	The annual update was overlooked –contacted EH-10 they suggested it could be tracked locally.
2003	ORPS	ORPS CH--AMES- AMES-2003-0001	<i>Peroxide Forming & Shock Sensitive Chemicals</i>	Identify and store peroxide forming and shock sensitive chemicals.
2003	ORPS	ORPS CH--AMES- AMES-2003-0002	<i>Notice of Violation</i>	Notification of intent to perform asbestos abatement.
2003	ORPS and NTS	ORPS CH--AMES- AMES-2003-0003	Sealed Sources	PuBe and AmLi sources were not properly documented as sealed sources.

Year	Type	Identification	Title	Description
2003	Local	AMES Local (03-001)	Yellow Powder Brought In	A small jar of yellow powder was turned in; determined to be radioactive.
2003	Local	AMES Local (03-002)	Powder Release – Fire Alarm	Powder escaped from fittings of apparatus, set off fire alarm.
2003	Local	AMES Local (03-003)	Legacy Radioactive Contamination	Two instances found in Spedding – a sink in the basement and drain on first floor.
2003	Local	AMES Local (03-004)	Chemical Spill During Disposal	A bottle of Lithium Aluminum Hydride broke after being placed on the floor after removal from storage cabinet.

Discrepancy Reports

Category	1999	2000	2001	2002	4-Year Average	2003	% Change from 4-Year Average
Coffee Pots	6%	11%	14%	9%	10%	7%	30% Decrease
Sink Hoses	0	0	0	<1%	<1%	<1%	Same
Unsecured Gas Cylinder	3%	2%	<1%	<1%	1.75%	3%	42% Increase
Soldering Pen/Iron on and hot	3%	2%	<1%	1%	1.75%	<1%	43% Decrease
Excessive Combustible Materials	<1%	0	0	0	<1%	0	Decrease
Door Cards	0	0	<1%	<1%	<1%	0	Decrease
Natural Gas Valve	4%	4%	<1%	3%	3%	4%	25% Increase
Main Cylinder Valve	<1%	1%	<1%	1%	2.5%	2%	20% Decrease
Uncapped Cylinder	4%	3%	<1%	3%	2.75%	6%	54% Increase
Obstructed or open fire door	<1%	<1%	0	0	<1%	0	Decrease
Unsecured Door	62%	56%	54%	63%	58.75%	44%	25% Decrease
Miscellaneous	18%	21%	19%	16%	18.5%	33%	44% Increase
Total	1136	992	748	825	925.25%	586	37% Decrease

The preceding data were reviewed and the following observations were noted:

- Although the number and thoroughness of walk-through events has not decreased over the past four years, 21 of the 24 Independent Walk-Through findings categories have decreased significantly with a 40% decrease in overall total concerns from the previous 4-year average.
- There has been an increase in the total number of Employee Safety and Security Concerns from the previous two years. The increase is seen as an indicator that employees are becoming more aware, concerns are receiving greater scrutiny and employees are participating more in the Safety and Security Concerns Program. No specific trends of the concerns have been identified. This program is a valuable tool to communicate operational practices and facility conditions, integrating safety into work at the Laboratory.
- As denoted by the injury and illness data, the total number and severity of incidents are decreasing. Unsafe conditions are being corrected, Personal Protective Equipment is being utilized and training is completed.
- The low number of reportable events indicates that the severity of injuries, illnesses and incidents is low. The local tracking of non-reportable events has proven to be another effective way to improve practices before more significant events develop.
- The number of discrepancies observed through the tours performed by Plant Protection Section has decreased in 2003 relative to the four-year average. This is at a time when

the number of tours has actually increased significantly due to increased security concerns since 9/11/01. The Laboratory has stressed individual issues over the past couple of years by adopting related contract performance measures and increasing the follow-up contacts after specific discrepancies are identified.

- Fire Safety has received extra attention to verify the areas where hot work is being performed, ensure the locations are set up in a compliant/safe manner and Hot Work Training is completed.

The Laboratory's feedback and continuous improvement mechanisms complement each other and support the performance improvements noted above. For example, the reduction of injury and illness statistics and the reduction of lacerations are probably due to increased emphasis of Personal Protective Equipment in Readiness Reviews and Independent Walk-Throughs, Injury and Illness Investigations and training. Based on trend analysis of the previous data and the observations, the following actions are planned:

- Particular effort has been made towards electrical safety since 1999 and will continue to be a target issue.
- Continued emphasis will be directed towards the identification of need and use of personal protective equipment.
- Environmental issues will receive continued attention to ensure compliance and best performance. The emphasis will be part of the Laboratory's continuing efforts toward an effective Environmental Management System.

Opportunities for improvement and/or notable practices

Areas of Excellence

The following areas of excellence have been identified.

Radiological Protection

- The Health Physics Group's open door policy with Iowa State University Health Physics is another key to success. The Ames Laboratory and ISU Radiation Safety Officers have committed to a monthly meeting to discuss issues related to the "grey" areas between the two overlapping communities on the ISU campus. The goal is to make the areas as seamless as possible while meeting or exceeding regulatory requirements.
- The RSO successfully located another facility to utilize a lead wall from the Waste Handling Facility, which was scheduled to be disposed at a substantial cost.
- The majority of unused radioactive materials possessed by Ames Laboratory were disposed of or transferred to another DOE facility for further research.
- Very positive results and comments were received from the OSHA and NRC audit teams. An OSHA inspector described the Ames Laboratory Radiological Protection Program as "phenomenal" and cited the Laboratory's practice of badging both hands of analytical x-ray users as a "good practice" in the final "punch list".

Industrial Hygiene

- Air sampling activities associated with the Industrial Hygiene program were reviewed during the OSHA audit in October. Results of the audit indicate few problems in the area of exposure assessments. The OSHA auditors were impressed with the monitoring records that were reviewed and stated that the Laboratory's exposure assessment activities were better than other DOE facilities they had inspected. The IH will continue to perform exposure assessments including chemical and physical agents. Asbestos, lead, beryllium and noise will continue to receive scrutiny in terms of assessment of exposure potential. Other potential exposures will be evaluated as a part of the Readiness Review procedure. To date, all monitoring results have indicated exposure

levels well below the appropriate Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PEL).

- The IH continued with efforts to make training modules more accessible via the development of computer-based modules. The bloodborne pathogens course was enhanced and is now being offered on a walk-in basis. The chemical hazard communication course was updated and continues to be made available on a walk-in basis. In conjunction with the Industrial Safety Specialist, Health Physicist and ISU EH&S personnel, work began on a Web-based laser safety refresher module.

Industrial Safety

- The relocation of Chemical and Biological Sciences from the Office and Lab Building to the new Carver Co Laboratory including employees, chemicals, furniture, research equipment such as lasers. No concerns were noted.
- The installation of safety glasses dispensers in the laboratories and workshops.
- A 75% reduction of OSHA Recordable lacerations from the previous year.

Fire Protection

The Fire Safety Committee continues to provide a response for fire safety concerns from within the Laboratory and as a focal point for questions from outside the Laboratory.

During 2003, the Fire Safety Committee addressed the following:

- Door swing during remodeling efforts in Development Building.
- Temporary egress issues during remodeling efforts in Development Building.
- Segregation issues involving rooms and access to the exit.
- Diesel fuel tank protection from traffic.
- Conducting the annual pre-incident tour with the Ames Fire Department.

Environmental/Waste Management

- Recycling efforts at the Laboratory are robust.
- Hazardous waste training was updated based on participants' comments and suggestions.
- Sharps containers were made available, by stocking them in the Ames Laboratory Storeroom, as a way to continue to keep the laboratory spaces clean and safe.

Opportunities for Improvement

The following opportunities for improvement have been identified:

- Proceed with development of a plan to reduce the Laboratory's inventory of mixed radioactive materials.
- Improve process of determination of radiological background level in each building for dosimetry purposes.
- Efforts to reduce the number of lacerations at the laboratory will continue with the implementation of new gloves, increased scrutiny of PPE Assessments, training and continued communication to Laboratory employees.
- Improvements will be made in the gathering and management of Emergency Door Card information.
- The IH will incorporate brief refresher training sessions on OSHA topics into the twice-yearly Safety Coordinator & Representative meetings. The appropriate ESH&A Specialist will teach these sessions.
- Event Report Program will undergo redesign.
- Causal Analysis process will be described in a revision to Corrective Action Development Procedure (Procedure 10200.039). Procedure will be revised as Corrective Action Development, Tracking and Verification.

Self-Assessment Rating

Overall, this self-assessment effort warrants a rating of "Outstanding." In addition, based on the above self-assessment and performance measures, the overall performance in the ES&H functional area is rated as "Outstanding."

FINANCIAL

System Indicators:

OBJECTIVE 1.0: Control uncosted balances.

MEASURE 1.1: Percentage of uncosted balances to total available to cost (TAC).

EXPECTATION 1.1: Uncosted balances to be maintained at levels needed to ensure continuity of operations as follows unless properly explained:

	<u>Within acceptable range</u>	<u>Unacceptable range</u>
Operating	<13% of TAC	≥13% of TAC
Capital Equipment	<50% of TAC	≥50% of TAC

NOTE: Only uncosted balances that exceeded \$1M at the four-digit B&R level will be included in this evaluation.

YEAR-END RESULTS: Ames exceeded both the operating and capital thresholds in KC02 at the close of FY2003. Ames submitted the detailed explanations below for those two areas and there has not been further inquiry into the KC02 levels. Therefore, Ames assumes Headquarters has no issues.

Organization: Ames Laboratory
M&O Contractor: Iowa State University

Assistant Secretarial Office: SC
Appropriation Symbol: 89X0222
B&R Control Level: KC02

Operating Uncosted as a % of Operating Costs: 20%

Major drivers of the 20% GSO level in KC02.

I. Materials and Engineering Physics (KC-02-01)

Numerous personnel factors affected FY2003 costs in the Materials and Engineering Physics Program. Anticipated start dates for several visiting scientists and postdoctoral research associates from overseas were delayed considerably, some still pending, due primarily to delays in the processing of visas. Also, five research staff members resigned; none of which were anticipated at the beginning of the fiscal year. To date only one of those positions has been filled. In another research area, a new position was projected in the FY2003 budget, but due to the delays in the hiring process, that position was not filled until five weeks prior to the end of the fiscal year. The costs that were delayed by these factors is roughly \$400K. The Materials Preparation Center had seen a drop in orders this fiscal year and funds had been reserved to cover an anticipated residual in the service center of approximately \$76K. But, in the month of September, three large orders were received that were processed and billed out for approximately \$75K, which unexpectedly brought down the anticipated residual. There was not time to redirect those funds and cost them on other program needs at that late date. Restoration of unspent FY2003 funds will be sought in FY2004.

II. Solid State Physics (KC-02-02)

The issuing of visas for visiting scientists and postdocs delayed certain projects in FY2003. Some visa delays have been longer than 6 months, with one still ongoing after nearly a year. After having made contractual agreements with outstanding scientists, and expecting them to be able to come to Ames in a reasonable time frame, the money was held and the Magnetic Molecule project delayed for their arrival. Several of the visiting scientists have now arrived (very late in FY2003) or will soon be arriving, and we expect to request restoration of the carryover monies that were committed to support them for the duration of the projects.

The Magnetic Molecule project was awarded late (August '02) and the funds could not be expended in FY2002. The project was ramped up starting from August '02 and various postdocs, visiting scientists, and equipment were costed in FY2003, however the full funding from FY2002 (\$650K) and FY2003 (\$617K) could not reasonably be expended in the 14 months involved, so there will again be a request to restore carryover funds, particularly for this project.

Anticipated restorations of FY2003 funds in FY2004 to cover these delayed Solid State Physics project costs will total approximately \$900K.

III. Materials Chemistry (KC-02-03)

A sub-project of the "High Temperature and Surface Chemistry" subtask includes a subcontract with Dr. Miguel Salmeron of Lawrence Berkeley National Laboratory (LBNL) to perform experiments to determine the properties of oxide film to aid the study of fundamental aspects of the unique mechanical properties of friction, adhesion and wear of quasicrystals. Costing did not actually begin on this project until April of 2002 and Dr. Salmeron's lab has not been able to entirely make up for the lost time from early in FY2002. LBNL has requested a no cost extension to complete this scope of work in FY2004. Restoration of \$23K will be requested.

Restoration of \$48K will be requested for the project entitled "Solid State NMR". One postdoc has been hired on this project, but it has been extremely difficult to locate and hire a second person with the necessary skills and qualifications in polymer physical chemistry and polymer spectroscopy. In addition, a highly qualified and skilled postdoc who had been working on this project for the last two years recently left to return to his permanent position in his home country.

The Polymer and Engineering Chemistry project has had recent changes in personnel that have contributed to reduced expenditures. Dr. Tom Barton has reduced his role, and Dr. Valerie Sheares unexpectedly left the Materials Chemistry program. Dr. Surya Mallapragada is assuming an increasing role on this project, and the program will be requesting restoration of \$60K for reorganization and redevelopment of workscope to bring the project up to speed.

In summary, if this cumulative amount of \$1,506K of KC02 operating expense could have been expended in FY2003, it would have brought the uncosted down to \$1,705K; resulting in an unspent percentage of 10.6% that would have been well below the 13% threshold for operating expenses. The restoration of these funds in FY2004 will allow the previously mentioned projects to complete the agreed to scopes of work and Ames should see a reduction in FY2004 GSO levels.

Organization: Ames Laboratory
M&O Contractor: Iowa State University

Assistant Secretarial Office: SC
Appropriation Symbol: 89X0222

B&R Control Level: KC02 EQU

Equipment Uncosted as a % of Equipment Costs: 59%

Major drivers of the 59% GSO level in KC02 EQU.

I. Late receipt of DOE capital funds. DOE was under a continuing resolution until March of FY2003. Prior to April 1, 2003 (the date that Ames received a fully executed and signed March 2003 Contract Modification containing 100% funding for FY2003) Ames had received only 45.9% of the FY2003 capital equipment funds in KC02. Since the timeframe for delivery of high tech research capital equipment is normally up to six months and can be from 1 to 2 years, the late receipt of funds did not allow the majority of FY2003 funds to even be committed until more than six months of the current fiscal year had passed. Ames is anticipating \$403K of capital procurements to be delivered in the first quarter of FY2004 that were encumbered in FY2003 with funds received after April 1, 2003. Had full funding been received in a more timely manner, the \$403K would very probably have costed in FY2003. This amount alone would have brought the KC02 EQU GSO down to 49%.

II. Major construction of the undulator line at the Advanced Photon Source at Argonne will soon be completed. One of the last equipment procurements of \$313K, placed in FY2002 with a 16 month lead time, is anticipated to be delivered the first quarter of FY2004.

The bending magnet beam line is a subsequent proposal, independent of the soon to be completed undulator beam line. The major capital expenses for the bending magnet beam line will come in the next two years as various infrastructure components are completed and large items (e.g. spectrometers) are ordered and installed; usually requiring longer lead times.

III. An additional \$176K of capital funding was received late August FY2003. There was not sufficient time to place the order and receive this item in FY2003

OBJECTIVE 2.0: Effective and efficient cash management for Work for Others (WFO).

MEASURE 2.1: Contractor billings should conform to signed WFO agreements in that total billings should not exceed agreement amounts, funding expiration dates should be observed, and closeouts should be initiated promptly upon completion of work.

EXPECTATION 2.1: Zero billing errors on non-ISU invoices.

YEAR-END RESULTS: The process for managing WFO projects continues to operate efficiently. The internal controls in the Accounting Office provide for accurate tracking. Separate tracking provides additional checks and balances by the Budget Office and the Office of Industrial Outreach. In discussions with other laboratory officials, we think that the Ames process is very similar to theirs. However, we often find that portions of our process that have been in use for a while, are of interest at other sites.

There were 191 billing invoices prepared in CY2003. Of the 191 billings, 140 invoices were one-time sales of research samples prepared at the Materials Preparation Center (MPC). The remainder is for Cash Work for Others (WFO) projects, which tend to involve multiple billings per project. There were 20 WFO projects that required 51 monthly billings. In addition to the above invoices, Accounting prepared an additional 40 monthly analysis statements to track prepayments made by sponsors. This is done to ensure costs did not exceed funding available. The total cash associated with these billings and statements in CY2003 was \$1,087,588. **There**

were no billing errors. All agreement amounts and expiration dates were complied with and close outs were initiated as soon as feasible. The number of invoices and projects in this category has diminished slightly over the past 5 years.

The Laboratory also has 64 non-cash WFO projects where monthly IPAC transactions are processed or transfer vouchers are sent to sponsors. There are similar processes to track expenditures for this work to ensure costs do not exceed funding limitations.

Compliance Items:

The Internal Audit function at Ames Laboratory annually conducts an audit to sample costs incurred and addresses the aforementioned compliance items within this audit. In the most recent audit, released April, 2003, the net dollar percentage of the population that was examined was 47.5% or \$2,711,727 of a total \$5,708,110 dollar population of processed transactions within the purchase order system. These transactions were tested for compliance to costing standards, for allowability, and for adherence to rules regarding related party transactions, as indicated in the guiding principles. *The audit found no issues of non-compliance relative to costing systems and related CAS and the Disclosure Statement requirements. In addition, all costs reviewed were allowable; adherence to the rules regarding related party transactions as indicated in the guiding principles was also noted from transactions reviewed.*

In conjunction with the testing of transactions on costs incurred, any substantive changes to control systems in the interim from the prior year's audit are reviewed and relevant procedural tests considered to determine if changes have adequate controls within them and are working as intended by management. Within additional auditable units at Ames Laboratory, risks relevant to the unit under review are considered, as associated with these compliance items. If relevant, audit procedures are developed to address the specific issues considered.

In addition, as part of the aforementioned audit, a review of the control testing performed by Procurement, as related to *purchase cards'* transactions was reviewed. The process and the samples, entailing 130 transactions or 9.4% from the population of 1386 transactions for the year, was also reviewed by audit. No unallowable costs were noted from the reviews performed by Procurement. The total amount examined by Procurement personnel in the transactions tested totaled \$21,882 from a population total of the year of \$234,071 or 9.3% of costs incurred under this procurement system.

Also, an audit by the Office of Inspector General Department of Energy (OIG-DOE) was conducted in March 2003. The scope of this review covered review of the allowability of costs as submitted on the Statement of Costs Incurred and Claimed (SCIC) form for the Fiscal periods of FY2000, FY2001 and FY2002. In addition, this included a review of the Internal Audit function at Ames Laboratory to determine if the Audit function fulfilled professional standards, and thus could be relied upon by OIG within the Cooperative Audit Strategy. The Cooperative Audit Strategy was initiated in 1992 as a strategy to optimize audit resources within the DOE audit community such that contractor internal audit functions partner with the OIG audit function to realize a synergy in deployment of audit resources throughout the DOE complex.

The result of this review by the OIG at Ames Laboratory included the following:

- \$0 in questioned costs, relative to Fiscal Year 2000 costs presented on the Statement of Costs Incurred and Claimed by Ames Laboratory (Contract # W-7405-ENG-82) of \$23,258,286.

- \$0 in questioned costs, relative to Fiscal Year 2001 costs presented on the Statement of Costs Incurred and Claimed by Ames Laboratory (Contract # W-7405-ENG-82) of \$23,381,489.
- \$0 in questioned costs, relative to Fiscal Year 2002 costs presented on the Statement of Costs Incurred and Claimed by Ames Laboratory (Contract # W-7405-ENG-82) of \$24,844,976.
- The audit also noted that the Internal Audit function at Ames Laboratory could be relied upon by the OIG audit function, in fulfilling Government audit standards, as well as fulfilling Institute of Internal Auditor standards.

Self- Assessment

Background

Scope and Organizational Overview

The functional areas that are included in the area of Business Operations: Financial are Accounting, Budget, Internal Audit, and the Directors' Offices.

Accounting is charged with maintaining a system of accounts in accordance with GAAP, the DOE Handbook and other regulations set forth by OMB, GAO, Treasury and Iowa State University. This system of accounts is designed in such a way as to allow our financial data to be integrated into the DOE accounting system. Financial data is transmitted to DOE on a monthly basis in order to facilitate this integration. Other monthly and annual reports are prepared for both DOE and Laboratory Management in order to assist in the management of the Laboratory.

The Budget Office is responsible for coordinating financial information coming from and going to the Department of Energy and other funding sources. In this role, the Budget Office is responsible for the budget formulation and budget execution processes of the Laboratory. The Annual Budget Submission and the Institutional Plan are the major components of the formulation process. Budget execution includes such functions as distribution of funds, allowability of costs under the terms of the Contract, and cost control. The Budget Office is expected to assure that the Laboratory complies with DOE financial regulations and orders and to assure that adequate controls exist within the Laboratory to demonstrate sound financial management. Interpretation of DOE policy and procedural recommendations supports the Laboratory's financial management processes. Budget interacts with DOE HQ and CH on financial matters and prepares financial reports for DOE and local management. Finally, the Budget Office provides direct support to Program Directors and Executive Management in the development and execution of their financial management plans.

The mission of Internal Audit at Ames Laboratory is to conduct a broad and comprehensive program of audit that encompasses all areas of the Laboratory. In partnership with management, it is the objective of Internal Audit to provide a catalyst for realizing positive changes at the Laboratory. Promoting effective control at a reasonable cost is also a goal of Internal Audit. Management control systems are reviewed to ensure that they are adequate to provide a reasonable level of assurance that the objectives of the systems are being accomplished and that the systems and controls are working effectively. (Reference: Clause I.86 of the prime and DOE Order 413.1A.) Issues pertaining to fraud, waste and abuse of government-provided resources are also addressed.

The Internal Audit function regularly reviews for cost allowability and for efficiencies in the conduct of operations. Also, commencing with Fiscal Year 1998, the Internal Audit function incorporated consideration of costing standards' reviews and related party transactions, as relating to the audit area. Audit resources are allocated based upon audit work required by the

DOE and by a risk methodology that encompasses the various functions and operations of the Laboratory.

The Directors' Offices are, among other things, the main drivers for travel and conference management at the Laboratory.

Recent Concerns and Related Actions

One area of concern listed in last years report is the discontinuation of support for the operating system on the Laboratory's financial mainframe and the need to move to another hardware platform. Over the last twelve months the Laboratory has spent a significant amount of time trying to identify options and then look at demonstrations of various software packages that could replace legacy systems that currently handle Laboratory business functions. We are nearing decisions on the hardware and software recommendations but will not discuss them until approved by the Executive Council. As these major decisions are made, we will be able to move on to items that are dependent upon our initial decisions. This trickle down process will continue until we officially move off the existing hardware.

The second area of concern dealt with advance funding requirements for the Laboratory and how those requirements impact our efforts to work with recipients of STTR and SBIR grants. Nothing has been resolved on this issue but we continue to elevate it as a concern so that it is not forgotten.

Process Management

Key Activities and Services

The functional areas reflected in the category of Business and Financial Management and the related Laboratory offices that are responsible for the tasks are as follows:

<u>Functional Area</u>	<u>Laboratory Office</u>
Budget Formulation	Budget Office
Budget Execution	Budget Office
Internal Audit	Internal Audit Office
Cash Management	Accounting Office
Asset Management	Accounting Office
Conference Management	Directors' Offices
Travel Management	Directors' Offices

Appendix I (DOE Directives) of our Contract contains a list of the applicable DOE Directives to which the Laboratory is subject. Some of these directives apply directly to Accounting and Budget while others relate to specific functional areas but may also require action by the Accounting and Budget Offices for compliance. The Conference Management requirements are also contained in this Appendix. These directives will not be listed here.

Clause I.40 of the Contract requires the Laboratory to comply with the provisions of 48 CFR, Part 9903 - Cost Accounting Standards.

Appendix D - Budget Program is a description of the budget process that the Laboratory is required to adhere to.

Various clauses in sections H and I of the Contract contain language, which primarily impact Accounting and Budget. Other clauses relate to other requirements but may impact these offices.

The Accounting Office is required to follow the DOE Accounting Handbook and in general, Generally Accepted Accounting Principals (GAAP).

The Internal Audit function regularly reviews the areas of the Laboratory as related to a risk assessment plan. This risk assessment plan encompasses all potential audit areas. Those that are relatively higher as related to the risk assessment process will be included in the Audit Plan of the subsequent fiscal period. As a service to Management, the audit function regularly reviews not only the reliability of the accounting information system as presented to the Department of Energy through its integrated accounts, but also the reliability and integrity of management information systems. These systems hold import in that they are of assistance to Management in allocating resources and in maintaining stewardship responsibilities to the taxpayer.

Economy and efficiency questions are addressed by the audit function as critical to maintaining appropriate stewardship of funds; issues pertaining to adequate safeguarding of assets, be they inventory or capital equipment assets, sensitive property or information "assets" are also addressed by audit. Internal audit is also required to address unallowable cost issues by including procedures, generally in all audit programs, to assure that no unallowable costs have been incurred. Government costing standards' compliance is to be reviewed by audit, as are issues pertaining to related party transactions. Internal control systems are to be reviewed by audit in order to attest that adequate controls are being maintained and that these controls operate within a reasonable cost/benefit relationship. Audit may review compliance to DOE directives as well as any other impacting prime contract requirements. Additionally, audit is required to keep apprised of primary developing systems in order to assure that the new systems include any auditing needs and to assist in recommending adequate control alternatives.

Process Management Assessment Criteria

The 2003 self-assessment consists of three main areas for review. First, there are two system indicators that deal primarily with the Laboratory's ability to manage its uncosted balances and its billing process. The two indicators were presented above in the **System Indicators** section. Second, the Laboratory will review three compliance items. Third, under the Self-Assessment Scope section, the Laboratory will review three topics that were agreed to for CY2003. Finally, the Contracting Officer would like additional information on the "Opportunities for Improvement" that have not been addressed previously.

Opportunities For Improvement

No new opportunities for improvement were raised last year. There is one opportunity for improvement that is a hold over from prior years, dealing with the Letter-of-Credit.

As stated in prior self-assessment reports the Laboratory's banking process has changed several times. The letter of credit changed when the Laboratory went on the ASAP system. It changed again with the new banking agreement with Bankers Trust Company of Des Moines. The Laboratory records and the DOE records do not agree as to the Laboratory's letter of credit balance. Ames Laboratory has supplied numerous documents to DOE-CH for review and it was agreed that this would be resolved in CY2002. In CY2003, the Laboratory received a letter from DOE-CH indicating that we should not spend any more time on this issue and that we should consider this concern closed.

Changes in System Procedures and Practices

Accounting systems were changed and/or improved in the following manner:

- DOE instituted an accelerated reporting schedule in January 2003. The time available to report monthly MARS financial data was reduced by one day at that time and reduced by one additional day starting in November 2003. Because split appropriation amounts are

due one day prior to MARS data, this essentially reduced processing time by two days. The Laboratory now begins month end processing on the last working day of the month to meet these deadlines. This requires cutting off payments of invoices sooner and may result in fewer cash discounts taken. The schedule for posting some vouchers was adjusted, estimates rather than actuals are now used for items not available by month end, and more accruals are created at month end, with reversals the following month. The Lab continues to evaluate which items received but not invoiced should be classified as an accrued expense, using the materiality threshold established in CY2001. As the workload increases during the year it may be necessary to reevaluate the practicality of this or adjust the threshold.

- DOE also instituted a change in reporting Fund 51 Property and Equipment in the MARS system. For the Laboratory this involved significant investigation to determine the original funding source of all items in our financial records. All month-end closing entries were modified as well as the process for posting depreciation. DOE's reporting requirement was again modified in October 2003, which required some system changes to report by fund type using the correct identifiers.
- The Office of Inspector General conducted an audit of the Laboratory's Fiscal years 2000, 2001, and 2002 financial records. All expenditures were accepted

Accomplishments

The process for obtaining telephone costs from the University, posting the telephone voucher, and backing up the data was modified and simplified. User reports were also enhanced.

Accounting purchased a scanner to enhance electronic processing of additional documents. It will also be used to enhance internal documentation.

Support for the minicomputer used for Business Operating Systems is being discontinued as of December 2006. The Laboratory is evaluating alternative platforms, and, as part of that process, a variety of software is being considered to enhance and/or replace the existing financial software and other legacy systems. This is a time consuming process where significant documentation is being prepared for review by potential vendors. Major modifications to the existing systems are currently on hold, pending a decision on how the Laboratory will proceed. Accounting continues to work closely with Information Services to make changes to existing systems as required to operate efficiently and effectively. Plans to enhance the Payroll database have been postponed pending a decision on new software that may be purchased. Although the accrued vacation liability voucher was scheduled for review and modification in CY2003, this has been rescheduled for CY2004.

Topical Areas

"Travel Management."

Travel at Ames Laboratory is an important tool in the Laboratory's ability to fulfill its mission for the DOE. Travel is watched closely and reviewed by the Program Director/Department Manager along with the Chief Operations Officer for all trips. Travel supported by indirect funding is reviewed and authorized by the Director during the budget development process at the start of each year.

The Strategic Alignment Initiative (SAI) was a program established back in ~ 1995 to reduce costs at DOE. One of the sub-programs under the SAI was a request for DOE contractors to reduce travel costs. Contractors were given "goals" which DOE wanted them to achieve. The following chart illustrates the goals and results that Ames Laboratory was able to achieve.

	Travel Target	Actual Costs
FY-1995	NA	\$ 1,325,000
FY-1996	\$ 1,611,000	945,000
FY-1997	1,250,000	680,000
FY-1998	950,000	687,000
FY-1999	700,000	666,000

For FY2000 and FY2001 Congress enacted a travel caps for funds provided to the Laboratory under the Energy & Water (E&W) Appropriation. Rather than impose both a SAI target and a travel cap, DOE eliminated the travel target. The travel caps for Ames for FY2000 and FY2001, respectively were \$600,000 and \$650,000. The caps were to cover travel by DOE and DOE contractor employees. This definition is different than the one that was used by the SAI initiative so it is difficult to compare pre-FY2000 costs to post-FY1999 costs since they were developed using different definitions. In FY2000 and FY2001 travel for Ames Laboratory totaled \$434,000 and \$512,000, respectively, under the definition used for the travel cap and of that, \$408,000 and \$479,000, respectively, was charged to funds provided under the E&W appropriation.

For FY2002 and FY2003 the cap was eliminated and targets were reinstated for all laboratories. The target for both years was set at \$650,000. This was left at the FY2001 level since Ames had several new programs coming on line and a higher level of travel was anticipated. Actual travel costs for FY2002 amounted to \$549,000 of which \$497,000 was paid out of the E&W appropriation. For FY2003, the totals were \$503,000 and \$452,000, respectively.

“Property Accounting.”

Overview:

Ames Laboratory maintains financial and physical controls over the acquisition, use, and retirement of real property and capital equipment (P & CE). The Laboratory utilizes various processes and systems to ensure both types of property are accounted for according to Government regulations, i.e. physical ownership is documented and financial records are accurate.

Laboratory policies regarding plant and equipment adhere to criteria in the Department of Energy (DOE) Accounting Handbook, Chapter 10. Policies also comply with Statements of Federal Financial Accounting Standards. All real property and capital equipment are accounted for and reflected in the official DOE financial records in accordance with the capitalization criteria set forth in the DOE Accounting Handbook.

The real property at Ames Laboratory consists of four major building structures, six minor buildings, and supporting structures. Ames Laboratory maintains records for two real property categories, as defined by the Management Analysis and Reporting System (MARS) chart of account classifications: Buildings and Improvements to Property of Others.

The Laboratory monitors four categories of equipment, per the Laboratory’s Property Management Policies and Procedures. Those categories are: Capital equipment, Sensitive equipment, Accountable equipment/Non-sensitive equipment, and Administratively controlled equipment. All four require physical controls but only the capital equipment category requires financial control. The Capital equipment category is defined as having a useful life of greater than two years and an original cost in excess of \$25,000. The majority of capital equipment is related to scientific research, i.e. classified as laboratory equipment. The remaining categories all cost less than \$25,000 and are coded to unique object classifications to identify the category type. Accounting reconciles the accounting records to physical records using existing system capabilities.

As of December 31, 2003 the total real property at Ames Laboratory was \$23,626,600, and the total capital equipment was \$43,194,204. In comparison, the Facilities Information Management System (FIMS) identifies total owned building costs as of January 2004 for other Laboratories that report to Chicago Operations Office at: Argonne - \$572,804,847, Argonne West - \$15,971,840, Brookhaven - \$419,327,326, Fermi \$228,468,305, and Princeton- \$108,426,601. Equipment costs are not readily available.

The acquisition cost of equipment that has been totally depreciated is \$28,749,175; depreciation on the remaining \$14,445,028 is calculated and recorded monthly in the appropriate account. Over the last five years an average of \$3,991,250 per year has been spent to purchase equipment. Annual depreciation calculated for the real property is \$474,043 and approximately \$3,213,364 for equipment. Over the last five years, the total amount and depreciation amount has fluctuated less than 1% of the total value for both real property and capital equipment.

The mechanisms for tracking capital equipment and real property include:

- Use of a designated range of Project numbers in the Laboratory's financial account structure whenever capital funds are used for General Plant Projects (GPP) and Capital Equipment. These numbers segregate and identify capital related costs in the financial management system.
- Use of a process called the Job Order (JO) system to accumulate and monitor costs associated with the purchase, construction, and/or fabrication of items expected to cost more than \$2,000. A separate field within the Laboratory's financial account structure identifies this type of work. One range of numbers in this field identifies purchase or fabrication of equipment-related work and a second range identifies work associated with GPP. The account number for All Capital equipment and GPP Job Orders contain a capital Project number that was described above.
- Use of object classification codes specific for various categories of equipment.

The Job Order system may be used to track capital purchases from outside vendors or construction of capital equipment as well as GPP construction projects, which affect Building or Property values. The Budget Office establishes a JO account number when capital equipment or property is involved and sends the Accounting Office a form for new JO's associated with new equipment, GPP work, or modifications of existing JO's. The form authorizes Accounting to establish or modify a JO commitment when it is received. Changes in JO commitments are reported to DOE in the monthly MARS report. When the JO is completed, all costs associated with the job order are posted to the appropriate Completed Plant and Capital Equipment balance sheet code, 2130xxx, and all equipment is entered into the master property records database. If multiple pieces of equipment are associated with one JO, each individual piece of equipment is assigned a property number. A system number is also assigned to consolidate all related pieces of equipment fabricated via the JO process.

When GPP Job Orders are completed, the total cost of the JO is posted to the appropriate Completed Plant and Equipment balance sheet code, 2130. The Property Accountant completes a Work Order Completion And Final Cost Report and sends one copy to the Laboratory's FIMS Manager for entry into the FIMS database, and one copy to the Chicago Operations Office. Entries into the general ledger and the FIMS systems are coordinated to ensure the financial data agrees with data in the FIMS database. The FIMS property records are reconciled annually with the summary financial control records in MARS.

Capital equipment is obtained in several ways. Items meeting the capital equipment criteria can be purchased from an outside vendor, or they can be constructed or fabricated by in-house shops, using the JO tracking system described. There can also be a combination of a purchase and construction, e.g. when in-house shop personnel install purchased equipment. Existing capital equipment can also be upgraded by direct purchase or construction/fabrication.

Requisitions to purchase equipment may contain a capital project number and/or a JO number. Requestors check a box on the requisition whenever sensitive or capital equipment is being purchased. The project number and/or checked box trigger a review by the Property Management Office. The Property Officer determines whether items should be recorded for control purposes and tagged with a property number, and then assigns the correct object classification code to the requisition. Accounts Payable staff may be consulted to ensure appropriateness, since they supply object class codes to all other requisitions. Purchasing confirms the appropriateness of object codes assigned by Accounts Payable staff if the order is associated with sensitive property items.

After the Purchasing Office inputs equipment requisitions into the Laboratory's Purchase Order (PO) system, the software program checks each newly created PO for designated object classifications, capital project numbers, JO numbers, a specific cost range, and certain combinations of these items. When the appropriate conditions are met, the system inserts an indicator in the electronic receiving system. This alerts Accounting, Property Management, and Warehouse personnel that an item is property. Identifying equipment or property purchases to these groups helps insure items are tracked appropriately.

The Accounts Payable staff review all new PO's and segregate those associated with capital equipment, and these PO's are given to the Property Accountant. A commitment is established for the total amount of the equipment PO. The account used for the commitment includes a unique memo fund type used for recording, monitoring, and reporting equipment-related commitments.

When property items are received, Warehouse personnel determine if the purchase is flagged as property, assign a property number upon receipt, and attach a permanent barcode property tag to the equipment. The property number is entered into the property screen of the PO system. These actions generate printing of two reports in Accounting: the Automated Receiving Report and a Property Received Report, which reflects the property number. Accounts Payable staff match the two reports to equipment related PO's and give the three documents to the Property Accountant.

Warehouse personnel enter a special code if there is a question about tagging an item. This occurs when items cannot be physically tagged due to their nature, such as computer boards, or if an item is a component contained within a piece of equipment. Materials Handling personnel review the item and assign a property number if appropriate, or remove the special code from the system if the item should not be tagged. When there is a change in the code or more time is required to resolve the question, the Property Accountant is notified of the change or anticipated time required for resolution. Delays usually occur when an item is defective upon receipt or if the Laboratory is waiting for post-delivery services such as vendor installation or training. A log of unresolved issues is maintained, and Materials Handling personnel are contacted for follow-up each month-end.

For equipment fabricated in-house, which is tracked using the JO system, portions may become operational before the entire JO is completed, and Accounting is notified which portion is operational. The Property Accountant requests the assignment of a property number if it wasn't assigned when notification is sent. The operational portion is capitalized when the number is

assigned. The cost of the item is posted to the appropriate Completed Plant and Equipment balance sheet code, and that item is entered into the master property records database.

A manual process involving paper based Ledger cards is utilized to document equipment, property, and improvements to property because Ames Laboratory is a relatively small DOE facility. It is not cost effective to purchase fixed asset accounting software and convert our process for maintaining that inventory. However, the Laboratory is currently considering the acquisition of software containing a Fixed Asset module, which could replace the manual system at no additional cost.

The Property Accountant creates a Completed Plant and Equipment Ledger card for all items assigned a property number. The Ledger cards supplement our master property records database, and there is one card per item of property to be capitalized. The following information is required on each card:

- Asset type code, per classifications in the DOE Accounting Handbook.
- Title number assigned to like items, e.g. vacuum pumps, lasers, etc.
- Property number.
- Detailed description including manufacture's model number, size, capacity, etc.
- Serial number.
- Manufacturer.
- Date acquired, i.e. month and year received or completed.
- Reference number, usually the PO number but may be a JV number if constructed as part of a JO.
- Total acquisition cost.
- Account number.
- Location data, i.e. building and room where it is located.
- Standard service life, per DOE Accounting Handbook.

The Accounting Office developed and maintains our unique Property Record Catalog per requirements in the DOE Accounting Handbook, Chapter 10. The Catalog is used to complete the Ledger cards and contains one section per asset type. Within each section there's a page detailing: 1.) Asset title, 2.) An explanation defining what constitutes that asset, 3.) Description, which is included on each property ledger card, and 4.) Appropriate unit of measurement. Additional pages per section list: A.) Title number assigned to like items, B.) Name of the property record unit associated with the title number, C.) Standard service life in years per title number, and D.) Depreciation rate assigned to each title number.

The property record units, noted in item B. above, establish groupings of the completed equipment accounts. These groupings facilitate recording changes to property accounts and reconciling physical inventories with financial accounts. When selecting the appropriate property record unit, consideration is given to an item's use, relationship with other associated items, relative importance, frequency of anticipated property changes, and monetary value. A property record unit may be a functional unit consisting of an assembly of associated items. Property Record units are presented in the catalog for the following asset types of plant and equipment:

500 – Buildings and Structures
600 – Utilities
700 – Equipment
800 – Improvements to Property of Others

At month-end, one journal voucher is created and posted into the General Ledger to the Completed Plant and Capital Equipment balance sheet code, 2130, and appropriate asset type. Examples of asset types include buildings, laboratory equipment, automatic data processing equipment, etc. The contra is an entry to the Plant and Equipment Changes in Progress

Balance Sheet Code (BSC), 2311, using Summary Class Code 81, Closings. This records capital equipment items that have been costed and assigned a property number plus Job Orders completed or operational and tagged.

The Laboratory maintains the Master Property Records database, which is updated by both the Property Management Office and the Accounting Office. Property Management personnel enter administratively controlled equipment, sensitive equipment, equipment that must be physically accounted for, and equipment purchased with Work For Others funds into the database. Security exists to ensure only the Property Accountant can enter capital equipment, which requires financial control. The information entered into the database includes:

- Property number and/or sub-number or system number assigned,
- Reference number; usually a PO number but may be a JO number.
- Service life, per the DOE Accounting Handbook.
- Management code, indicating who has responsibility for the equipment.
- Location data, i.e. building and room where the equipment is physically located.
- Status code, per the MARS Chart Of Accounts (COA).
- Asset type code, per the MARS COA.
- Title number, per the Ames Laboratory Property Record Catalog.
- Date acquired or month and year completed.
- Short description of the equipment.
- Manufacturer, or Ames Laboratory personnel if fabricated.
- Model and serial number.

When equipment is entered, a report detailing changes made to the master property records database is automatically generated. An additional report is requested from the database with totals for all asset types, and the financial software is queried for totals per asset type. The two documents are compared to assure they agree. Any discrepancies noted are investigated and corrected.

Property is depreciated, using the straight-line method mandated by DOE, at a rate based on the specific service life specified on the Completed Plant and Equipment Ledger card per item. Depreciation expense is calculated and posted monthly. Accumulated Depreciation accounts are maintained and reported for each asset type classification. If property is retired prior to expiration of its estimated useful life, treatment of the residual amount, i.e. the retirement loss, is posted to Net Cost of Operation. At year-end the annual depreciation expense is reallocated to all funded programs as part of managerial accounting process. Beginning in FY2003, depreciation on Plant and Capital Equipment In Service was charged to the appropriate Budget and Reporting (B & R) classification where the property was originally funded. This change was implemented to comply with impending DOE reporting requirements. The total Accumulated Depreciation that had been charged solely to the Landlord account was reallocated to the appropriate B & R funding source, based on research, by the Property Accountant. Whenever the original funding source was indeterminable, the depreciation was allocated to the predominant B & R code. This amount was not material. As of October 1, 2003, depreciation will be reported with a code to indicate which fund type provided the original source of funds.

When property is loaned, transferred, retired, or otherwise removed from service, the Property Management Office prepares the appropriate forms and sends them to the Accounting Office. This documentation is retained by the Accounting Office. It serves as support for entries posted to reclassify the asset(s) and the corresponding accumulated depreciation from the Completed P & CE balance sheet control accounts. Any residual amount is posted to Net Cost of Operations.

Controls Over Capital Equipment:

Physical protection of Government property is provided by proper tagging of appropriate equipment, electronic monitoring of all building entrances and locked rooms where equipment is located, restricted access to Laboratory buildings during non-business hours, and routine patrols by the Laboratory's guard force. Per Chapter IV of the Laboratory's Property Management Policies and Procedures manual, theft of government property is considered remote during working hours due to the large number of people working in offices and laboratories. In addition, personnel are expected to wear badges and are reminded annually to keep track of strangers exhibiting suspicious behavior in Laboratory spaces. In the past five years, only two items, each costing less than \$5,000 have been reported stolen.

The Property Services Office organizes and conducts inventories of all capital equipment in order to fulfill prime contract requirements. Inventories of capital equipment are conducted biennially, with inventories of sensitive property in the alternate years. In FY2002, 2,018 items were inventoried, representing \$50,737,364; in FY2000, 1,972 items were inventoried representing \$46,189,983; and in FY1998, 1849 items were inventoried representing \$36,237,595.

If an item is found that was written off in a previous period, an analysis is performed to determine if it should be returned to its original in-service status. Some equipment may have a property number tag but are not recorded in the master property records database. Usually these are items that will not be recorded until the job order through which they were purchased is closed and the equipment is classified as operational. These are also analyzed to determine whether they should be recorded.

At completion of the inventory, the Accounting Office adjusts the financial records to reflect all changes in capital equipment since the previous inventory. A report is submitted to DOE listing items to be written-off or written-on with an explanation, and the adjustment is not processed until approval is received. The adjustment for the FY2002 inventory included a write-on of 4 items for a total of \$34,397.00, the FY2000 adjustment included a write-off of 1 item for a total of \$5,006.60, and the FY1998 adjustment included a write-off of \$1,951.73. These amounts represent .07%, .01% and .005% respectively of total inventory value.

Accounting instituted a review of our Property Manual as a result of this evaluation. The procedures have been updated to include the appropriate references to DOE documents and other Laboratory manuals. Examples of various documents and reports have also been updated or added to enhance the explanations. Additional written guidance was provided when necessary.

"Budget Execution Process"

It is the responsibility of the Budget Office to act as the central coordinator of financial information coming from and going to the Department of Energy (DOE) and other funding sources (with the exception of accounting information transmitted through the FIS/MIS system, which is the responsibility of the Accounting Office). The Budget Office is expected to assure that the Laboratory is in compliance with DOE financial regulations and orders, and to assure that adequate controls exist within the Laboratory to demonstrate sound financial management. The Budget Office provides direct support to Program Directors, Division Directors, and Department Managers in the development and execution of their financial management plans.

Ames Laboratory's Budget Execution process begins late August with the Budget Office formulating the first iteration of the total Laboratory's anticipated cost plan for the coming fiscal year. The first step is an analysis of the direct funding anticipated for each research area. The President's Budget and the Revised Budget submitted in the last Annual Budget Submission are

reviewed and discussions are held with the Program Directors, Budget Analysts, the Laboratory Director, Deputy Director, and Director for Science and Technology to determine the most realistic levels of funding anticipated. Based on these discussions, an initial cost plan is developed for each direct funded account. The second step is the development of initial cost plans for each indirect/overhead department. These plans are obtained from the budget requests that are submitted in July by the Department Managers of each support and distributed (shop) cost center in response to the overhead budget call.

Based on projections of overhead revenues for the upcoming year, the Budget Officer provides Division Directors with a target funding level and their respective overhead departmental budgets. The Division Directors prioritize their Department Managers' budget requests and identify which functions will be accomplished within those target funding levels. The Division Directors then return their division's target level budget along with any incremental budget requests to the Budget Officer for an extensive review. New or significantly modified activities must be reviewed for any Environmental, Safety and Health (ES&H) issues or National Environment Policy Act (NEPA) implications. If any ES&H issues or NEPA implications are identified at this point in the process, the Environmental, Safety, Health and Assurance (ESH&A) Office is consulted to assure that financial costs associated with the activity have been included. Growth in overhead units must be clearly identified and addressed as separate incremental requests with "drivers" sufficiently documented. All existing staff must be addressed and contingency plans are developed when staff reductions are necessary. Budgets for support units that charge back services must include the cost of those services and the expected revenues to support those costs.

A comprehensive budget package of base level budgets, incremental requests, and critical issues is then compiled by the Budget Officer for the Laboratory Director. The Director, respective Division Director, and Budget Officer review all support activities to determine that the right mix and optimal level of overhead support is provided for the Laboratory. Overhead budgets are established for the upcoming fiscal year with careful consideration to the effect on outyear budgets.

In addition to analyzing the data by individual department, the data is also examined on a laboratory-wide scale. This is accomplished by accumulating the individual data for all direct funded programs, indirect funded departments, and support units that charge back services on a spreadsheet more commonly known as the iteration. Included in the spreadsheet are several types of statistical data that allows examination of the Laboratory from different points of view. This data includes the personnel (FTE), and operating and capital costs by program. Because Ames Laboratory does not have an automated system, the iteration is the first time that all of the budget data is brought together. This consolidation allows the evaluation of the overall impact of the individual budgets on the Laboratory. Thus the iteration becomes a very important tool used to make management decisions in the execution of the current year budget. It allows for problem resolution such as verifying the proper calculation of overhead, checking for mathematical errors, determining if any data is missing, or if any accounts were omitted. The iteration also provides information necessary to perform laboratory-wide system checks and/or identify over/under distributions of the overhead pools and the distributed cost centers. By performing system checks, significant variances can be identified and evaluated to determine if any adjustments to the budget plans are required. The iteration is updated periodically throughout the year to monitor (and if needed, adjust) overhead and pool rates.

In addition to the strong involvement of Ames Laboratory's Upper Management in the indirect budget execution process, the Chicago Operations Office (CH) also conducts various reviews and oversight of the process. Each year CH conducts a Budget Validation of the Annual Field Budget Submission. This includes the iteration model prepared for the Budget Year. That iteration includes the projected budgets for all direct and indirect funded departments by the

primary cost components such as direct labor, benefits, materials, services, burdens, etc. Ames provides an annual list of changes to the disclosure statement that defines the Laboratory's financial structure. Also, in accordance with the Guiding Financial Principles Agreement of April 1997, Ames annually submits the following information to CH for review:

- Forward pricing rates for the active fiscal year for all indirect cost pools. Each pool of expenses is broken down by the Laboratory's cost centers in the manner in which the Laboratory accumulates its indirect costs. The allocation base is identified by the primary cost components such as direct labor, benefits, materials, services, burdens, etc. The projected distribution base and rate to be assessed for each pool is also included.
- Actual indirect cost rates following the close of each fiscal year reflecting each pool of expenses broken down by the Laboratory's cost centers in the manner in which the Laboratory accumulates its indirect costs. The allocation base is identified by the primary cost component such as direct labor, benefits, materials, services, burdens, etc. Also included are the distribution base and rate assessed.

CH is also notified of all indirect rate changes made during a fiscal year.

The first Approved Funding Program (AFP) containing DOE funding for the next fiscal year normally arrives at Ames late September. If the appropriation bills have been passed, the Laboratory would normally receive full funding in October of the new fiscal year. But, if Congress has not passed the appropriation bills, the AFP levels will be based on the most conservative information available (normally the lower of the President's Budget or the House or Senate numbers). If Congress fails to pass appropriations for the new fiscal year by October 1, it is likely a continuing resolution will be enacted to provide limited interim funding. In this case, allotments are issued in accordance with provisions of the continuing resolution.

In mid-September DOE will request estimates of mandatory requirements (e.g., payroll, contracts, etc.) chargeable to each appropriation, in weekly increments, for the first five weeks of the new fiscal year. Only funds currently obligated in the contract and the unobligated balances for unexpired appropriations are available for initial fiscal year operations. Work (incurring costs) is authorized when funds are received in the contract modification (via the AFP) and the related work authorization guidance (program guidance) is received.

Funds for Work for Others activities can be received at any time during the fiscal year. Work is authorized upon receipt of funds in the contract modification (via a fully signed interagency work order, IPAC, interagency agreement, memorandum purchase order, Military Interdepartmental Purchase Request, etc.), and any applicable fully signed and executed Work for Other Agreement, Cooperative Research and Development Agreement (CRADA), etc. Copies of all such agreements are distributed to the Program Directors and Principal Investigators.

The Budget Officer authorizes all internal account codes, assuring receipt of funds and all required documentation prior to the authorization of work for any Laboratory activity (DOE, Work for Others, reimbursable services, or support activities). Concurrent with the internal authorization of new account codes, the Budget Officer notifies the Manager of Environment, Safety, Health and Assurance (ESH&A) that funding has been received to initiate a new research activity and provides a copy of the scope of work on file. ESH&A will then contact the Principal Investigator in order to initiate any required readiness review. Also, if the Ames Laboratory Export Control Officer determines that an Export Control Review is required for any new proposed activity, if funded, the Budget Officer will notify him/her of receipt of funding at this time. The Budget Office then allocates funds to the appropriate Ames organization for expenditure. Allocations to the organizations are for cost ceiling and not budget authority

(unless the project is closing out). By limiting the allocated amount to cost ceiling, the control is in place to avoid exceeding the level of budget authority and GSO's (Goods and Services on Order).

All funds received are entered into a document called the Funds Available Report, used by the Ames Laboratory Budget Office for controlling funds distribution and the monitoring and control of costs. This report is updated monthly with costs and funding at the lowest level of internal funds distribution for all direct funded activity. Included in this report are: prior year carryover funds, new budget authority and budget obligations, restorations of prior year funds, fiscal year budgets, year to date costs, projected yearend carryover, and project end dates. It is color coded by the various DOE Budget and Reporting Code levels and individual accounts for Work for Others to easily identify internal allocation distribution levels, DOE control levels, and DOE appropriation levels.

Each direct and indirect account at Ames Laboratory is assigned to a Budget Analyst within the centralized Budget Office. The Analysts are responsible for providing copies of program guidance to the research areas, assuring the program is aware of any reporting requirements, monitoring financials, reviewing detailed budgets input into the Laboratory's cost report system, and alerting management to any potential problems. As the year progresses, the Budget Analysts monitor their assigned departments to assure that the individual budgets stay on track; reviewing changes, salary slippage, and the occasional redirection of activity. Budget Analysts meet with Program Directors/Department Managers or their financial program assistants on a monthly basis to review budget plans for the execution year. The Budget Office maintains certain standards for these budget plans. These standards include:

- That the plan, at the program/department level, accounts for all of the staff currently on board; either by allocating funds to cover wages, by arranging transfer of staff to another program, or by providing for orderly reductions in force. (The Budget Office maintains a budget ledger/database, called the Person Year Equivalent (PYE) Report, that projects actual salary with anticipated escalation per individual per account with exacting accuracy. This ledger also contains actual benefit costs. Since payroll and benefits comprise ~65% of the Laboratory's costs, the majority of the cost components in any given budget can be very well defined.)
- That the plan covers all known commitments and fully pays the required overhead assessments.
- That when the plan relies on expected funding that cannot be confirmed by the Budget Office, the expected funding be identified (even though it will not be budgeted), and contingency plans be developed for how the Program will manage if the expected funding does not materialize.
- That all budgets be reviewed by and signed-off by the appropriate Program Director/Division Director.

In addition, the budgets are reviewed and approved by the Budget Officer. This review is a certification that the budget is a reasonable agenda for the program or project, and that either the funds are in hand or the Budget Officer has assured himself/herself that there is adequate reason to believe that the funds will be forthcoming. These budget plans are then entered into the Laboratory's internal Cost Report System that is used to monitor costs vs. budget plans at the cost component level. If, at any point, sufficient funds are not available to continue an activity, the Budget Office will close the account.

The Budget Office uses a variety of tools/processes to assure compliance with the approved budgets. The most important is the review and approval of all personnel transactions. All requests for new or replacement personnel or extensions must be approved by the Budget Office. All requisitions for new permanent positions must be signed by the Budget Officer, the Division Director, and the Chief Operations Officer. Any request for a change of accounts, change in compensation, change in percent of time that the employee can work, or other personnel status changes must be approved by the Budget Office. Even within the Budget Office, only senior level staff are authorized to sign personnel change forms. Actual and projected costs resulting from all approved personnel actions are incorporated into the PYE report (also distributed to Program Directors and Department Managers) that assists in monitoring and controlling these costs for the entire fiscal year. The Budget Office maintains this projection system for both salary dollars and personnel effort.

All purchase requisitions are routed through the Budget Office prior to a purchase order being cut. The requisition is reviewed to assure that a valid account number has been used and that it has been properly signed. The Budget Officer is required to sign any requisition with a total cost exceeding \$5,000. The Budget Office maintains a dynamic online system into which the purchase requisition information is entered as it is processed through the Budget Office. Budget Analysts may access this system at any time. Budget Analysts in the Budget Office may request that all purchase requisitions or purchase requisitions within any specified set of parameters, for as many accounts as necessary, be routed through him/her if an account has insufficient funds to cover additional encumbrances.

Ames has an internal job order system that tracks the funds authorized and costs charged for the fabrication/construction of items in our internal shop service areas. All service work requests are authorized by the Budget Office to assure sufficient funds are available and the correct source of funds is being used. Once a job order is approved, the appropriate shop and the requestor are notified that work can commence. Job orders that are established for general plant projects (GPP) also require a construction directive authorization (CDA) approved by the Chicago Operations Office prior to internal approval and authorization to start work. Monthly reports of all job orders are monitored and notices are sent to the primary service provider (lead shop) and the requestor if an authorized amount is exceeded. A job order can be shut down until supplemental funds are authorized to complete a job.

As yearend approaches, adjustments are made to the monitoring schedule to assure an orderly yearend close. In July all Laboratory budget plans are more closely reviewed. Cost plans are developed for the final quarter of the fiscal year and scrutinized to assure sufficient funds remain. Final restorations of DOE funds are sought, if needed, and final adjustments are made to all budget plans. Ending GSO's are reviewed for sufficient funds to cover outstanding commitments and necessary costs for continuity of operations in October of the next fiscal year. The Budget Office keeps the Directorate informed of any potential problems. A final iteration is developed and any significant overhead rate adjustments are made. Mid-August meetings are held with Purchasing and Accounting to determine the yearend shutdown schedule. Target dates are established for accruals of services & materials and the distribution of costs in accordance with DOE instructions. A soft trial close is performed mid-August in preparation for weekly soft closes in September. Mid-September the Budget Office distributes a list of accounts that will be closed October 1 to Laboratory support functions to assure that any related shop work is finished and billed by September 30, and that no new procurements are placed that will be expensed to closed accounts after the close of the fiscal year.

Business Results

Business Results Assessment Criteria

With CY2000 being the first year of a new contract, the Finance section of the self-assessment was renegotiated to include a three-year cycle of reviews. Travel costs will be reviewed annually while property accounting and the budget execution process were new for this year.

System Indicators

The two system indicators deal primarily with funds control. In managing uncosted balances the Laboratory has implemented systems that help control the amount of funds carried over from year to year. It is a fine line between having enough funds on hand to start the new year and exceeding the limits imposed by the percents indicated in this objective. Ames does an outstanding job of managing funds that are received in a timely manner. As can be seen by the statistics, included above in the two situations where the Laboratory exceeded the uncosted balance goals, unusual circumstances lead to the overage. These circumstances were beyond our control and have to be viewed in light of the fact that Ames will not spend money just to get our uncosted balances below a predetermined level. On the flip side, no matter what the impact will be to our uncosted balances we will always try to submit proposals to DOE calls and if successful we will accept the funds provided by DOE. In the two cases above DOE has found our explanation acceptable. Based on the results of this analysis we feel the Laboratory's performance at managing uncosted balances is "Outstanding".

The second objective deals with invoicing and controlling funds available to perform WFO. Funds management for WFO is taken seriously at the Laboratory. Where possible, advance funding is received from the sponsor. Where not, advanced funding is obtained from the Contractor or the work is not done. As can be seen by the statistics presented, no errors were made on any of the invoices prepared in CY2003. In any book, this performance is "Outstanding".

Compliance Items

During CY2000, the CASB changed the Cost Accounting Standards such that Ames Laboratory is no longer required to comply with all 19 standards of CAS. We are now only responsible to comply with four standards, which would allow us to drastically change our method of recording and distributing costs. According to DOE-CH we are no longer required to complete a disclosure statement. However, since it is already complete we have decided to keep it current and update it with changes as they occur. Based on reviews by the Internal Auditor, our disclosure statement reflects our current procedures and our practices comply with the disclosure statement. Further, the unallowable cost review found no items of unallowable cost and no findings arose out of the review for related party transactions. Based on these reviews the Laboratory's performance for compliance issues is "Outstanding".

Topical Areas

"Travel Management."

FY2001 was the first year in many that travel costs increased for the Laboratory and FY2002 continued in the same direction. However, in FY2003 that trend reversed again and our travel cost dropped. This drop reflects several issues including staffing issues discussed earlier and situations like the war in Iraq and terrorist activities that tended to dampen enthusiasm for travel. Overall our travel costs are down significantly from FY1995. As can be seen by the statistics provided regarding travel costs, Ames Laboratory has been an active participant in complying with the SAI effort to reduce travel costs. The Laboratory did an excellent job at complying with the travel cap imposed in FY2000 and FY2001 and the targets in FY2002 and FY2003. As much as we would like to claim that Management has moved the Laboratory into this position on its own, the truth is that travel costs seem to be more of a function of funding than anything else. When funding was dropping, travel also dropped but in a larger percentage. Now that some funding is coming back into the Laboratory travel costs are necessary to get the new initiatives

up and running. In addition, the new forensics initiative has an educational component that will require a higher percentage of travel. As part of the management process, the Laboratory Director looks at every trip supported by indirect funding and prioritizes them. Those trips we can afford are funded, but many important trips are eliminated. It is important that indirect costs remain at a minimum so that more funding is available for science.

Even though we cannot control the resources available for travel, we can control the way we use those resources. In light of the reduced resources available for travel, the Laboratory has encouraged use of money saving techniques. Use of non-refundable tickets, Saturday-night stays, flying out of alternate cities where airline tickets may be cheaper, sharing rooms, sharing rental cars, driving to Chicago and other nearby destinations, combining trips back-to-back and sharing travel costs with other Contractor departments are all techniques that we encourage. Ames Laboratory makes every effort possible to stretch our travel dollars to the maximum extent possible. Many of the travel savings techniques listed above are comparable to those used by other laboratories. The only travel savings techniques that other laboratories use that we cannot individually are the ones related to quantity discounts. We have been able to utilize other organizations' agreements such as State of Iowa airline discounts and car rental contracts that other laboratories have negotiated. We are constantly looking for new ways to save money. When possible we have provided data for travel cost studies to DOE and contractor groups that are looking for additional ways to reduce travel. Based on the Laboratory's management of travel costs and the Laboratory's efforts to utilize methods to control these costs the performance for travel management is rated as "Outstanding."

"Property Accounting."

The property accounting function at Ames Laboratory is a mature process that delivers a consistent and accurate result. As evidenced by the minimal adjustments required from the physical inventory process, the Laboratory has instituted controls to both track and protect the property which has been entrusted to us. The Laboratory was one of the first laboratories that adopted the use of the FIMS database and has been diligent to keep that database up-to-date and reconciled with the financial accounting records for real property. The Laboratory has mechanisms in place to gain the proper approvals from both DOE and Laboratory management for real property improvements and systems to assure that the improvements are written on to the financial records when complete. The same types of processes exist for equipment additions both procured and constructed. In light of the fact that the Laboratory has such a high rate of assets accounted for at inventory time and based on the review of property accounting it is our opinion that the property accounting function at the Laboratory is rated as "Outstanding."

"Budget Execution Process."

In FY2003, there were approximately 370 incidences of funds being placed in the Ames Laboratory contract modification. Ames internally allocated those funds to 112 direct accounts and 36 indirect accounts. There were 147 internal active job orders in FY2003; 113 of which were supplemented with additional funds in FY2003 and 54 which were new jobs funded in FY2003. No cost ceilings were exceeded in any direct account. Eight of the 36 indirect accounts exceeded internal budget plans. Of those eight, 7 exceeded their budget plan by less than one percent and 1 exceeded its budget plan by less than five percent.

In conclusion, Ames Laboratory's integrated Budget Execution process includes involvement of all management levels of the Laboratory, including the Laboratory Director in reviewing and sizing all indirect functions to assure the Laboratory's needs are met in the most cost-effective manners. Checks and balances have been incorporated in both the direct and indirect execution processes. The Laboratory's Program Directors and indirect Department Managers are required to thoroughly justify their needs and are continually encouraged to find efficient and cost-effective means of accomplishing their functions. The monitoring and control of costs are such that unusual costing patterns can be identified quickly and reviewed and corrected in a

timely manner. In FY2000, DOE CH conducted a verification of Ames Laboratory's Integrated Safety Management System. One documented noteworthy practice of that review was that the Budget Office is integrated into the hazards and requirements identification process in the authorization of both research and facility work. Overall, the Budget Execution process at Ames Laboratory is "Outstanding".

Internal Audit

In conducting the performance self-assessment of the Audit activity, the following outcomes were noted in the past year:

- The Office of Inspector General, through the cooperative audit strategy, placed continued reliance upon the Internal Audit function.
- Transactions totaling over \$2,711,727 in costs incurred were reviewed as part of the costs incurred audit (Fiscal 2002) that routinely tests systems of management control to determine if they are adequate and working as intended by management to preclude costs unallowable under Contract terms.
- In addition to determining costs' allowability under the Contract, cost allocation issues to final cost objectives were reviewed to determine compliance to the Disclosure Statement on file with the DOE and the relevant federal costing standards. Appropriateness of any related party transactions were also considered in the testing of costs incurred, in accordance to agreements for implementation of Guiding Financial Principles.

Other outcomes of the internal audit process include:

- Improved accountability of materials as associated with cave inventories, relative to the Radiation Protection Program.
- Assessment of the adequacy and effectiveness of management controls within the credit card procurement system.
- Assessment of the adequacy and effectiveness of management controls within the space management system.
- Assessment of the adequacy and effectiveness of management controls within the Occupational Medicine program.
- Review of the External Dosimetry program, as well as other functional elements of the Radiation Protection Program (i.e., Functional elements 4,5,7 and 8).
- Follow up and assessment of the adequacy of corrective actions taken by managers with respect to audit findings on prior audit work.

The Internal Audit self-assessment provides additional evidence that the finance function at the Laboratory is sound and reliable. The assessment also indicates that the Internal Audit function is a reliable and useful function at the Laboratory. Based on the results of these reviews Laboratory Management feels that the finance group continues to be a top notch group and the performance in this area is rated as "Outstanding."

Overall Summary for Finance

Areas of Excellence

The Laboratory continues to get high praise from the Finance Office in DOE-CH. The validation process of the Laboratory's Annual Budget Submission yielded no findings by CH. Also, the Laboratory Director recently received a letter from the CFO recognizing the efforts of the Laboratory in submitting complete and accurate financial statements in a timely manner.

The Laboratory's Internal Audit Office is recognized for the thorough and comprehensive manner in which it performs its audits. Based on this recognition the DOE-IG continues to

expand the role of Internal Audit in providing reviews of various functional areas within the Laboratory.

Opportunities for Improvement

None at this time.

Self-Assessment Rating

The systems in place have allowed Laboratory Management a high level of confidence that the scope of work matches well with the funds requested from various sponsors and the costs associated with the work performed are properly recorded in the system of accounts and reported to Management and DOE. The Internal Audit function attests to these results and provides a forum for ideas to continuously improve the Laboratory's business processes. In addition, the travel management function is performing as desired by Laboratory Management in the spirit of the DOE requests.

Based on the results of the self-assessment and ratings on the performance measures above it is the Laboratory's opinion that the overall performance rating in the area of Financial Management is "Outstanding."

DIVERSITY

System Indicators:

OBJECTIVE 1.0: Strengthen commitment and accountability to Equal Employment Opportunity and affirmative action and maintain a diverse workforce.

MEASURE 1.1: Maintains a systematic approach to the recruiting and retention of new talent from diverse populations and continual attention to training and self-renewal.

EXPECTATION 1.1: Increase or maintain workforce diversity compared to prior fiscal year.

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE Orders.

YEAR-END RESULTS: At year-end of 2002, we were in the process of seeking an individual for a PI track position in our scientific division. The result of that search was the addition of a person of Russian descent. At the time of the midyear review, we were seeking another individual for a PI track position with the result being the addition of a scientist with residency in Germany and citizenship in Austria. As of this date we are seeking yet another PI track person with the recruitment process just being underway.

The contractor employment statistics show a growth in employment of 2.7% for the 2003 year with the population of women increasing by 2.8% and the population of minorities increasing by 16.1%.

As has been stated in previous years, the environment in which the Laboratory sits is ultra supportive of development and maintenance of a diverse workforce. Statistics on the Laboratory's employment have reflected year in and year out a continuing commitment to the diversity program. This year's activities have again shown an increase in workforce diversity and warrant a rating of "Outstanding" for this measure.

Self-Assessment

See Human Resources Section.

PROCUREMENT

System Indicators:

OBJECTIVE 1.0: Ensure that the contractor has an effective procurement management system that ensures quality goods and services are obtained at reasonable prices, in a timely fashion, and in accordance with the statutory and regulatory requirements and programmatic needs of the agency.

MEASURE 1.1: Perform Balanced Scorecard evaluation in accordance with the FY2003 Balanced Scorecard Plan.

EXPECTATION 1.1: Provide FY2003 Balanced Scorecard Report.

YEAR-END RESULTS: The FY2003 Balanced Scorecard Report will be submitted under separate cover. Based on the approved BSC plan, the Laboratory achieved a point score of 97, which correlates to an "Outstanding" adjectival rating.

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE orders.

Critical Items:

There are no critical items.

Significant Changes:

There are no significant items.

Self-Assessment

Background

Scope and Organizational Overview

The Purchasing Services Office buys all goods and services for Ames Laboratory. The mission of the office is to provide reliable, cost effective service to the user communities and operate the office in accordance with appropriate government regulations and directives. The internal management structure of this office is as outlined on the organization chart on page 117.

Recent Concerns and Related Actions

There have been no significant concerns raised either internally or externally to the Laboratory.

Process Management

Key Activities and Services

The Purchasing Services Office provides the following services to its internal and external customers:

- Buy goods and services
- Administer the Credit Card Program
- Administer the Small and Small Disadvantaged Business Subcontracting Plan
- Write and administer purchasing policy
- Advise Executive Management on prime contract issues when requested

- Provide routine and adhoc reports to both internal and external customers

The office's customers are all Laboratory and IPRT personnel from an internal prospective and DOE (CH), vendors and Iowa State University from the external. The principal regulations that guide the operation of the office are as follows:

- Federal Acquisition Regulation (FAR)
- Department of Energy Acquisition Regulations (DEAR)
- Prime Contract Articles
- Iowa State University Purchasing Policy

Process Management Assessment Criteria

Ames Laboratory and DOE (CH) agreed to use the Balanced Scorecard (BSC) Performance Measurement Model as issued by Richard H. Hopf dated December 18, 1997 (as updated), to assess the Laboratory's performance in Purchasing Management. A BSC plan was submitted by the Laboratory and approved by DOE (CH) that describes both the activities to be assessed in CY2003 and the value weighted results that are expected in each activity.

Business Results

Assessment Criteria

The Laboratory has exceeded the DOE established targets in 15 of the 17 BSC objectives. The objective of Supplier Management was very close to the target. Acquisition Excellence Through Timely Support (>\$100K) was not meet.

The Laboratory has reviewed Clause I.88, Contractor Purchasing System, and it is our opinion that the Purchasing Office's systems and methods are in compliance with the requirements. The basis for this determination is the approval of the Laboratory's Purchasing System by DOE(CH) upon completion of its on-site review and obtaining a 98.6.0% on section IP-1, Compliance, of the Balanced Scorecard.

Compliance with the contract Make or Buy Plan provisions (Clause I.111 and Appendix E, the approved Make or Buy Plan).

The Ames Laboratory Make-Or-Buy plan is a functional plan that recognizes the requirements of the Federal Government to do work efficiently and effectively at a low cost and balances this with the fact that the Laboratory is quite stable in its research and operational efforts. Given its integration on the campus of Iowa State University (ISU) there are many functions that Ames Laboratory does not have to provide and thus, does not have to concern itself in the make-or-buy process. For example, the Laboratory does not have its own cafeteria, chemical storeroom, library, power plant, chilled water plant, fire department, police force, aircraft fleet, automobile fleet, laundry, garbage collection service or various other services. These are available from either ISU, the city of Ames, or from private companies on an as needed basis. In essence, a buy decision has already been made to acquire all of these services rather than make them. This is also a very cost effective way to handle these services since we pay for the services as we need them rather than maintaining a continuous capability for these services.

This year's assessment started with the annual review of the Make or Buy Plan itself. The plan was deemed to still be valid and was not changed. Given our size and stability of operations no new functions came on board this year that would require an update of the plan

Section V of the Ames Laboratory Make-Or-Buy Plan lists the functions that have already been outsourced (such as the automobile fleet, laundry, and refuse collection) and those that are both made and bought (such as mail distribution, training, architect and engineer services). In this latter group we have found that a small portion of the service support needs to remain on site in

order to provide for smooth and continuous operations. We are finding that certain maintenance items are also subcontracted as needed. These are usually large, labor-intensive projects or ones that require special training to perform.

Section VII of the Plan lists the steps that Ames Laboratory must perform either annually or as needed in order to fulfill the requirements of our contract. The first review is an annual review of the various departments of the Laboratory performed by the Director, Chief Operations Officer and the Budget Officer. The process started in the summer when budgets were built by the functional managers and were sent to the Budget Office for review for completeness. The responsible Deputy or Associate Director then reviewed the request and incorporated changes as needed. Finally, in the October or November time frame the departmental budgets were reviewed by and defended to Dr. Barton, the Laboratory Director. Each of the departments listed in Section III was subjected to this review process. No new services were initiated in CY2003 so no new make-or-buy analysis was needed last year.

Finally, no decisions were made to change the classifications from core to non-core and therefore, no make-or-buy reviews were needed.

Make or Buy Decisions

During FY2003 two scientific shops were reviewed by their Manager to determine whether to continue the functions internally or whether to outsource them. The Materials Preparation Center has three shops: Materials, Analytical and Metallography. Materials is the primary unit that provides high quality and unique research samples of materials to researchers all over the world. The Analytical and Metallography shops provide support services to MPC-Materials and other staff in the Materials and Engineering Physics Program, the Laboratory and the University. The two shops reviewed were the Analytical and Metallography shops.

Usage of both shops has decreased from previous years. Following are the revenues generated by both shops over the last 4 years.

	FY00	FY01	FY02	FY03
Analytical	\$81,096	\$42,937	\$30,709	\$23,254
Metallography	\$54,143	\$33,800	\$30,298	\$30,821

As can be seen, the usage of the Analytical Shop has decreased substantially. The level of sales currently is not enough to cover the cost of having a chemist on hand to provide the sample analysis and to maintain the equipment. For analytical services it has been decided to discontinue operations and make arrangements with an outside laboratory to provide analytical services for the Laboratory when needed. This decision was made in part by the fact that the analytical chemists that ran this shop retired, taking with them a vast knowledge base that is necessary to perform these services. With the reduction in revenue as indicated above the MPC was unable to support the hiring of an analytical chemist which, in turn, reduced the shop's ability to attract new work. In the end, it was decided to work with an outside vendor and contract for the work needed rather than pay a premium in order to maintain these capabilities.

Metallography is also experiencing a decrease in sales activity but our analysis shows that the main issue with Metallography is that it primarily supports Materials and Engineering Physics. It is also more difficult to contract for these services outside the Laboratory. Therefore, the MPC will discontinue this as a shop function and metallography services will get rolled back into the Materials and Engineering Physics Program where it came from a few years ago. The Program

will retain the services of the technician to perform metallographic testing when needed but will also use the technician for other tasks within the program.

Other examples of make-or-buy decisions we have made this year include services needed to clean up legacy contamination of site. One service that we reviewed was for asbestos tile removed in vacated space. Even though our facility workers are trained in asbestos removal they tend to handle small patch jobs. In this case the amount of space vacated was approximated half a floor in an old building. After evaluating the resources needed to conduct the work and reviewing the environmental requirements for removing asbestos it was decided to hire a subcontractor to perform the work.

Another example of a make-or-buy decision in dealing with legacy contamination is the need for concrete removal to test for contamination under the concrete. The facilities manager considered purchasing a concrete cutting saw to perform the work since it could be used on subsequent cleanup work. Upon comparing our needs and the services provided by a subcontractor it was decided to hire the subcontractor to cut and remove the concrete. Since they already had the equipment they could match the size of the saw with the cut needed at a greatly reduced price over the cost of new equipment.

In addition to the above, the process of moving the Laboratory's business systems off of the HP3000 is requiring a constant review and analysis to determine what software packages to write and which ones to buy. We are trying to identify COTS (commercial off-the-shelf) software that is affordable and will do what we need done. Our existing general ledger package and two peripheral modules are COTS and can be converted. We are trying to explore all the options before we move forward with a conversion. The biggest issue is the number of legacy systems we have that are internally written. These will be the primary focus of our make-or-buy decisions.

In conclusion, it is Laboratory Management's opinion that its Make-Or-Buy plan is in compliance with Clause I.111 and Appendix E of the contract and that the Laboratory follows the plan in its daily operations.

Summary

Areas of Excellence

The Purchasing Services Office is operated by a total staff of 3.4 FTEs that purchase all required goods and services and administers all the requirements associated with the DOE M&O contract. Given the limited staff and resources, the office maintains high standards and expectations that are reflected in the overall rating received.

Opportunities for Improvement

The objective of Supplier Management (on-time delivery) appears to stay within the 75 to 80% range despite the Lab's best efforts to follow up on overdue deliveries. If 7 days are added to the on-time delivery date, the percentage increases to 88%. This indicates that we are close but will need to continue to work toward improvement.

The objective of Acquisition Excellence through Timely Support (Average Cycle Time) was not attained for Purchases >\$100K. There were 4 purchase orders in this classification of which 2 exceeded the 40 day target. An analysis of the purchases indicated that the majority of the time was devoted to obtaining approvals from Departments outside of the Purchasing Office.

Self-Assessment Rating

Based upon the above discussion and the results of the Balanced Scorecard, the overall self-assessment rating of the Purchasing Services Office is "Outstanding."

TRAINING

System Indicators:

OBJECTIVE 1.0: The contractor shall identify each individual's mandatory retraining needs and shall verify module completion to ensure work is performed safely and effectively.

MEASURE 1.1: On a calendar year basis, the following performance levels will be applied to the percentage of active employees Laboratory wide who have completed their identified mandatory training.

EXPECTATION 1.1:

Outstanding	>95%
Excellent	90-95%
Good	85-89%
Marginal	<85%

RESULTS:

12/19/03 Retrain Training Status

Program	Group	Complete	Pending	Overdue	Total	%Compl
AL-011	Respirator User Safety Training	26	0	3	29	89.6
AL-012	Lockout Tagout	46	0	3	49	93.8
AL-013	Forktruck Training	22	0	0	22	100.0
AL-014	Hoisting And Rigging	45	0	4	49	91.0
AL-015	CP	8	0	0	8	100.0
AL-019	Basic Electrical Safety (<600 Volts	93	0	8	101	92.0
AL-020	High Voltage Electrical (>600 Volts	35	0	1	36	97.0
AL-023	Confined Space Entry Procedure	32	0	0	32	100.0
AL-026	Haz. Waste Operations Tech. 24 Hr./8HR. Retrain	4	0	0	4	100.0
AL-027	Haz. Waste Operations & Emerg. Res. 40H/8H Retrain	8	0	0	8	100.0
AL-035	BBP Exposure Control Plan Training	36	0	4	40	90.0
AL-063	Safe Equipment Wiring	30	0	0	30	100.0
AL-073	Hazardous Waste Generator Training	271	0	0	271	100.0
AL-074	General Employee Radiological Training (GERT)	31	0	0	31	100.0
AL-076	RW II - Radiation Producing Device Use	76	0	0	76	100.0
AL-077	RW II - Radioactive Materials Use	17	0	0	17	100.0
AL-089	Fire Safety Brochure	637	0	8	645	98.0
AL-093	101 P&T Hwy & Air General Aware. & Familiarization	16	0	0	16	100.0
AL-094	102 P&T Hwy-Identification of Hazardous Material	7	0	0	7	100.0
AL-095	103 P&T Hwy - Packaging Operation	7	0	0	7	100.0
AL-096	104 P&T Hwy - Marking of Package	7	0	0	7	100.0
AL-097	105 P&T Hwy - Labeling of Package	7	0	0	7	100.0

Program	Group	Complete	Pending	Overdue	Total	%Compl
AL-098	106 P&T Hwy - Shipping Paper	7	0	0	7	100.0
AL-099	107 P&T Hwy - Placarding	7	0	0	7	100.0
AL-100	108 P&T Hwy - Separation & Segregation	7	0	0	7	100.0
AL-101	109 P&T Hwy - Unique Moves	7	0	0	7	100.0
AL-102	110 P&T Hwy & Air Safety (Site Specific)	15	0	0	15	100.0
AL-103	111 P&T Hwy - Radioactive Material Transportation	2	0	0	2	100.0
AL-104	112 P&T Hwy - Hazardous Waste Transportation	1	0	0	1	100.0
AL-105	115 P&T Hwy - Driver's Training	2	0	0	2	100.0
AL-122	Radiological Control Technician	2	0	0	2	100.0
AL-125	Asbestos Worker	1	0	0	1	100.0
AL-127	Chemical Hygiene Plan Training for Group Leader	34	0	3	37	91.0
AL-131	Machine Safeguarding	91	0	3	94	96.0
AL-137	Chemical Hazard Communication	289	0	3	292	98.0
AL-139	Scaffolding Training	21	0	0	21	100.0
AL-140	Waste Mgmt. Contingency Plan/Spill Release	9	0	0	9	100.0
AL-141	Asbestos Awareness	8	0	0	8	100.0
AL-142	Asbestos & 16 Hour Operations & Maintenance Worker	6	0	0	6	100.0
AL-144	Vehicle Mounted Elevating & Rotating Work Platform	15	0	0	15	100.0
AL-145	Fall Protection Training	26	0	0	26	100.0
AL-146	Fire Extinguishers (Emergency Response Team)	9	0	0	9	100.0
AL-149	Welding Safety & Hotwork	51	0	0	51	100.0
AL-150	Hazard Communication (Non-Chemical Users)	249	0	0	249	100.0
AL-156	Hazard Awareness for Custodian	9	0	0	9	100.0
AL-158	Hoisting & Rigging Inspector	3	0	0	3	100.0
AL-159	Asbestos Contractor/Supervisor Training	7	0	0	7	100.0
AL-162	RW I - Rad Worker Training for Support Staff	9	0	0	9	100.0
AL-164	Counterintelligence Training	658	0	0	658	100.0

The Training performance measure for the retrain of mandatory training modules produced 1 module with a “good rating”, 5 modules with an “excellent rating” and 43 modules with an “outstanding rating”. The continued development of computer based training modules has provided employees with the flexibility they need in order to meet their identified training requirements. In addition, various forms of communication (hard-copy announcements, email announcements, and phone calls) are provided to employees so they are aware of mandatory training modules with approaching retrain dates.

Self-Assessment

Critical Items

The Training Program does not have any critical items to address.

Background

The mission of the Ames Laboratory Training Program is to provide for the development and implementation of the processes used to facilitate and document the training of all employees. A primary emphasis is placed on the fulfillment of Environment, Safety, and Health (ES&H)

training requirements. It is also the charge of the Training Program to provide the Director assurance of the Laboratory's compliance with various training requirements.

The Ames Laboratory Training Program had its inception in 1991 with the hiring of an ES&H trainer. The trainer worked out of the ES&H office until 1993; at which time the Office of Assurance and Assessment (OAA), an independent office reporting directly to the Laboratory Director, was formed in response to a DOE Tiger Team finding. The ES&H trainer was then transferred to OAA and became the Training Coordinator for the Ames Laboratory. In 1997, OAA merged with the Environment, Safety, and Health (ES&H) Group to form the Environment, Safety, Health, and Assurance (ESH&A) office, which now reports to the Laboratory's Deputy Director. The multi-task orientation of the office involves a concerted effort by all staff members. Though each area is the responsibility of an individual specialist, teamwork is often required to accomplish the goals of the office. The organizational structure for the Training Program has continued in this venue to the present. Currently, the Training Program consists of Training Coordinator (.35 FTE), a Program Assistant II (.30 FTE), five primary, part-time Subject Matter Experts (.15 FTE), and a student hourly position (.20 FTE). In addition, the Training Program secures additional assistance from several training vendors and utilizes some training resources from Iowa State University. The Training Coordinator is responsible for the overall management of the Training Program and the Program Assistant II aids with day-to-day training operations. The SME's are responsible for developing, maintaining and presenting the various safety and health training modules, including the Laboratory's General Employee Training (GET). The student hourly is responsible for the majority of the training records management, media preparation, computer-based training assistance and customer service support activities.

The Ames Laboratory Training Program provides all employees with the training necessary for the safe and productive completion of their work responsibilities. The heart of the program is the Needs Assessment Process, which identifies training requirements, work-site hazards and essential job functions for Laboratory employees. Subject Matter Experts (SME's) provide training from various disciplines from around the Laboratory. The SME's, in conjunction with the Training Coordinator, prepare sound lesson plans to address identified needs. Course evaluations are also obtained to continually improve upon the training events. Furthermore, the program utilizes the Ames Laboratory Training Records System (ALTRS) to track employee training participation in relation to mandatory job requirements. This information is shared with employees and supervisors on Employee Training Profiles (ETP) and they are given the opportunity to create individualized Training Action Plans (TAP's).

Opportunities for Improvement Identified at Year-End 2002

- *Set up a committee to develop a Training Status Form and the criteria in order to be granted an ISU or Off-site status. Once this action is completed, training completion statistics will be improved by removing Associate Employees who are not in need of safety and health training.*

The Training Coordinator has begun drafting a Training Status Form in an effort to clearly determine off-site associates with no work related hazards. Also, discussions are underway with the Information System Department on how programming changes will be made to the Ames Laboratory Training Records System (ALTRS) so that a new "status assignment" can be made on each individual's Employee Training Profile. The implementation time for this item is quite significant and will require additional planning and programming. The completion of this item will provide the Laboratory with better information regarding an associate's specific work assignment and allows the Training Department to cease tracking training requirements for employees who reside off-site with no hazards.

- *Perform programming changes in ALTRS to enhance the automated Radiological Reminder Letters System to include the generation of reminder letters for the new training module "Radioactive Materials for Support Staff (Radiological Worker I)".*

This item is still pending and will be included on the Training Department's Opportunity for Improvements List.

- *Update various items for the Laser Safety Program, e.g., lesson plan, desk procedure, training procedure for the Laser Safety Manual, etc.*

The Training Department worked with the Laser Safety Committee including members from Iowa State University Environmental Health and Safety (EH&S) Department. The Laser Safety Manual was updated in 2003 and the Training section was rewritten by the Training Coordinator. The Laser Training Authorization Form was updated along with a desk procedure and a tracking log for the Laser Safety Program. The Training Coordinator and members from the committee also worked with ISU's EH&S Department to develop a retrain module for Laser Safety and the new retrain requirement will be instituted by July 2004.

- *Investigate electronic options of sharing training records between Ames Laboratory and Iowa State University's Environmental Health & Safety Department.*

Multiple discussions were held with the Environmental Health and Safety (EH&S) Department regarding the electronic sharing of training information. Due to EH&S's workload and privacy issues EH&S has indicated the need to defer this item. The Ames Laboratory Training Office will still work closely with ISU's EH&S Training Coordinator to share training records and to ensure employees are compliant with established training requirements. All information obtained is received as hard-copy and the information is input into the Ames Laboratory Training Records System. The collaborative effort helps ensure that training costs are kept to a minimum by having reciprocity for a number of training modules.

- *Develop computer based training option for the Safety Coordinator/Safety Representative Module (AL-031) and Hazardous Waste Generator Training Module (AL-073).*

The script for the Safety Coordinator/Safety Representative course was drafted and recording for the PowerPoint computer based module is currently underway. It is anticipated that the computer based option for this training class will be available in January 2004. The Hazardous Waste Generator Module has been recorded and a script is under development. It is anticipated that the computer based option for this training class will be available by April 2004.

- *Update General Employee Training (AL-001) and incorporate suggestions obtained during the Environmental Management System (EMS) review.*

The General Employee Training Module underwent several changes to include the suggestions from the Environmental Management System Review and comments from an Export Control Program Review. Currently, the module is undergoing some formatting changes to streamline major topics for further clarity. In addition, new layout changes will be incorporated with fresh graphics.

- *Continue the process of updating the Welding Safety and Hotwork Training Module (AI-149).*

The Welding Safety and Hotwork Module has been completed by the Industrial Safety Officer, which included developing a new PowerPoint presentation. Associated media packets were prepared and the several class offerings have been presented. Also, a Hotwork Permit Authorization module was developed and presentations of this module will occur in early 2004. In addition, the Welding Safety and Hotwork module is being scripted for recording. It is anticipated that a computer based option for this course will be available by mid-year 2004.

Significant changes

Significant changes in the training system procedures or practices include:

- Updated computer based training modules including, Chemical Hazard Communication Training (AL-137), Bloodborne Pathogen Exposure Control Plan Training (AL-035), Integrated Safety Management Training (AL-143) and Hazard Identification Training (AL-130). The Training Office has been focusing on creating more computer based modules to provide more flexibility for employee schedules.
- Updated several classroom training modules including the lesson plans, PowerPoint presentation and media packets including, Personal Protective Equipment (AL-133), Laser Safety Training (AL-070), Hoisting and Rigging (AL-014), Machine Safeguarding (AL-131), and Hazardous Waste Generator Training (AL-073). Modules are continuously reviewed and improvements are made to enhance the clarity of the course, add new information or generally refresh the course.
- Prepared new classroom training modules for Welding Safety and Hotwork, Hotwork Permit Authorization, and Packaging and Transportation Highway and Air General Security (AL-181). The Welding Safety and Hotwork module was made more robust and clarifies which types of work a researcher may perform and what types of work should be handled by the Facilities or Engineering Services Departments.
- Prepared a Needs Assessment Report on the Ames Laboratory Training Records System (ALTRS) for the Laboratory's Information System Department. This information was needed for planning purposes to help with a future system conversion.
- Provided Subject Matter Experts with training information regarding several topical appraisals, i.e., Ladder Safety, Confined Space Entry, and Safety Coordinator/Representative Orientation. If a topical appraisal has an associated training requirement, the SME always investigates employee training compliance.
- Prepared several Emergency Awareness mass mailings for Safety Coordinators to ensure that Emergency Awareness Training Forms (AL-002) were completed by members of their Program/Department. Sent multiple Training Need Questionnaire (AL-000) mass mailings to supervisors to ensure that their employee's had completed this information. Performing these mailing reminders helps increase the Laboratory's completion rates for these modules. As of December 17, 2003 the completion rates for the Training Needs Questionnaire was 96.4%, General Employee Training was 96.2% and Emergency Awareness Training was 90.6%.
- Prepared a special training mailing for Ladder Safety (AL-136), along with sending out quarterly mailing for Hazardous Waste Generator (AL-073) retrain. Both of these items are training mailers and the distribution maintains employee compliance.
- Provided Laboratory wide retraining via an informational mailer for Counterintelligence Training (AL-164). The mailer was sent to all Ames Laboratory employees on December 19, 2003 and a global update was performed on the Ames Laboratory Record System, which updated all Employee Training Profiles. This training awareness mailer will keep the Laboratory's employees informed about new changes in DOE's Counterintelligence Program.
- Managed the annual mass mailing to all Ames Laboratory and IPRT employees for the Employee Training Profile/Training Action Plan, which is used in conjunction with

Performance Evaluations. This training mechanism ensures supervisors have a clear understanding of the training requirements identified for their employees.

- Distributed the Laboratory's annual Retrain Mailing including Fire Safety, Cyber Security and other training information. This mailing ensures compliance for several modules that have associated annual retrain requirements for all Ames Laboratory employees.
- Prepared various reports including, the annual Training Statistics Report for Program Directors/Department Managers, the Training Cost Report, the Self-Assessment Report, etc. While also reviewing Retrain Reports and numerous training query reports to ensure employees are compliant with their identified training requirements.
- Updated all Training Announcement templates with appropriate language so that the announcement serves as a temporary building access pass in the event of a building lock down. Also, incorporated a supervisor sign-off section to allow the removal of training requirements should an employee's work activities change.
- Worked with the Industrial Hygiene Officer regarding the updating of several chemical handout booklets, i.e., Peroxide Forming Chemicals, Handling of Cyanide Compounds, Picric Acid, Perchloric Acid, and Hydrofluoric Acid. The Peroxide Forming Chemicals Handout is now distributed in the Hazardous Waste Generator Module (AL-073) and the others are distributed to employees in the Chemical Hazard Communication Training Module (AL-137) should they work with the described chemical.

How Training and Educational Initiatives are Designed.

The Laboratory's Subject Matter Experts (SMEs) design the Laboratory's Training Modules with assistance from the Training Coordinator. SMEs utilize their education and experience to interpret various DOE, OSHA, ANSI, and other appropriate regulations as related to their designated disciplines. Each Ames Laboratory Training Module then is prepared in accordance with the Module Development Process, which has been in effect since December 1993. The module development process first requires the SME to complete a Training Module Initiation Form, which serves to summarize the main components of the module. The main components include, qualified instructor list, module length, training priority (mandatory, suggested, or elective) and timing, associated retraining requirements, the regulatory driver of the module, testing requirements, module format, etc. A lesson plan is developed which includes a Classroom PowerPoint presentation, Computer Based Training option, challenge examination, etc. The SMEs also is responsible for identifying the audience for the module and completing the TNQ Update Information Form, which ensures that all affected employees are identified. The SME seeks comment from other knowledgeable SMEs and specialists and makes appropriate updates. Finally, the entire Lesson Plan Folder is submitted to the Training Coordinator for review. The Training Coordinator ensures all steps of the Module Development Procedure (10200.002) are carried out. Once approved, the module is assigned a Module number and the new module trigger question is added to the TNQ. The module is advertised on the Laboratory's Training Schedule and Training Announcements are generated for all identified employees. The Training Module Development Process along with Job (Activity) Specific Training guidance ensures that an employee's competence is commensurate to the work for which they are assigned.

How Training and Education is Delivered

The first action prior to delivering employee training is ensuring that you have identified an employee's training needs correctly and the Ames Laboratory utilizes a Needs Assessment Program to accomplish this goal. The Needs Assessment Program is a joint effort between Human Resources, Occupational Medicine, and ESH&A. The Needs Assessment Program provides a mechanism to identify potential hazards, training needs, and essential job task

elements. The identification of hazards and job task elements are identified on a Hazard Inventory/Job Task Analysis Packet. A supervisor completes this packet at the time of requesting a new hire. Once an employee is hired, his/her training needs are determined by the completion of a TNQ. The results of the TNQ are provided to the employee on an Employee Training Profile (ETP). The information collected during the Needs Assessment Process aids the supervisor in planning for training events and triggers certain medical actions and related ESH&A room monitoring events.

Once an employee's training profile is generated, they will receive training announcements for any module for which they have been identified. Almost all ES&H training modules are delivered on a monthly basis and the Laboratory's General Employee Training (GET) is offered once a week. To ensure that employees receive GET promptly, the Human Resource Department registers the new employee for a GET session at check-in. In addition, a number of modules are delivered by Computer Based Training or examination and are offered continually on a walk-in basis. Currently, the Laboratory provides 93 active ES&H training modules and 12 administrative/ professional development training modules. Also, Ames Laboratory employees have the benefit of numerous professional development courses offered by Iowa State University.

The majority of the Laboratory's training modules are classroom based. Typically the training module is delivered using a PowerPoint presentation. Each module also has a training media packet for the class participant. The structure of the packet usually consists of the PowerPoint slides (for note taking), associated procedures/policies (ESH&A Program Manual), educational handouts/brochures, exam/quiz, and a class Evaluation Form. The majority of the classroom based training modules including General Employee Training utilizes lecture, video, interactive exercises, and a question and answer period. The question and answer period is an essential component as it helps the instructor ascertain whether the class participants have a clear understanding of the topics covered. In addition, the Training Office continues to work with Subject Matter Experts to prepare computer-based options for most of our mandatory training modules. All CBTs have an associated test or quiz and many offer an accompanying media packet. In addition, several modules also require that Job (Activity) Specific Training be provided by their supervisor. The Laboratory also uses challenge examinations and hands-on instrument training for Analytical X-ray Users and Radioactive Materials Users. Finally, the last delivery method utilized is informational mailers. An annual "Retrain Packet" is sent to all employees to satisfy several retrain items including, Computer Security Training, Fire Safety, as well as, various retraining reminders. Also, training mailers are being used to deliver Hazard Waste Generator Retraining, Counterintelligence Training, Waste Management Contingency Plan Training, Ladder Safety Training and Hazard Communication Training for Non-chemical Workers.

How Training and Educational Initiatives are Evaluated and Improved

Training modules are evaluated and improved by using the following mechanisms: written employee training evaluations, verbal feedback (employees, Safety Coordinators, and Group Leaders), Lessons Learned, Independent Walk-Through Concerns, Topical Appraisals, Readiness Reviews, continual regulatory reviews by SMEs, and reviews of external agencies training classes.

The most common evaluation of educational initiatives is the Laboratory Training Evaluation Form. Each class participant at the conclusion of a training module completes a Training Evaluation form. The form garners the clarity and relevance of the course content and assesses the instructor's knowledge of the material and their delivery. The evaluation solicits feedback on improving the course, the training facility, as well as, other training courses that might benefit the employee. The Training evaluation forms are immediately reviewed by the Class Instructor, the Training Coordinator, and the Manager of ESH&A. These evaluation comments have

helped direct many module updates, including adding fresh videos, interactive exercises, or reorganizing topical information for further clarity.

The Training Coordinator and SMEs also receive verbal feedback from employees throughout the Organization. Much of the verbal commentary occurs during discussions with Safety Coordinators and Group Leaders when reviewing Employee Training Profiles, Readiness Reviews or conducting Independent Walk-Throughs. A Lesson Plan may also be enhanced with information acquired through a Lessons Learned event. SMEs frequently review regulations as they pertain to their subject matter area and then reflect the latest information in their courses. In addition, the Laboratory's SMEs audit training modules at Iowa State University (ISU) and collaborate with their ISU counterparts on various safety topics.

Summary

Opportunities for improvement and/or notable practices

Opportunities for improvement have been identified through observations by specialists and the development of this self-assessment report. They are:

- Complete the computer based training formats for the Hazardous Waste Generator Training (AL-073) and Welding Safety and Hotwork Training (AL-149).
- Finalize formatting changes for the General Employee Training (AL-001) classroom training module.
- Continue with programming plans to institute the off-site status designation for Associates of the Laboratory.
- Work with the Information Systems Department to link Employee Training Profile (ETP) Information to the Laboratory's Training web page to allow all employees quick access to their own ETP.
- Once ETPs are linked to the Training web page institute a practice of sending a monthly email notice to keep employees aware of their identified training requirements and to direct them to the monthly Ames Laboratory Training Schedule.
- Continue to provide the Laboratory's Information System Department with assistance regarding the construction of a new Ames Laboratory Training Records System Database and transferring the existing data as they convert the current server to a different system.
- Submit a Service Order Requisition to begin the installation of a ceiling mounted LCD projector and speaker system in the Laboratory's Training Room. To date, the Training Room layout has been drafted and the needed equipment has been ordered.

Self-Assessment Rating

The focus of the Laboratory's Training Program has been for the continued development of computer based training modules to allow employees the flexibility to complete their identified training requirements. The Training Coordinator will continue to work with the Laboratory's Subject Matter Experts (SMEs) to update lesson plans and freshen various Environment, Safety and Health modules, especially those with established retrain requirements. Also, changes to the Training web page will help enhance communication with employees so that they can regularly access their own Employee Training Profile. The Training Coordinator along with SMEs will continue to use multiple communication methods to ensure that employees receive

the proper training in order for them to perform their work activities safely and effectively. Overall, the Training Program self-assessment effort warrants a rating of “Outstanding”.

SCIENTIFIC AND TECHNICAL INFORMATION

System Indicators:

OBJECTIVE 1.0: 100% of Ames Laboratory's unlimited-distribution technical reports are publicly available on the DOE Office of Scientific and Technical Information (OSTI) web-based InfoBridge.

MEASURE 1.1: Percentage of unlimited-distribution technical reports, which are issued during the Fiscal Year, and are available to DOE-OSTI in full-text electronic form by Calendar Year End.

EXPECTATION 1.1:

<u>Performance Level</u>	<u>Performance Expectation</u>
Outstanding	≥90%
Excellent	≥80%
Good	≥70%
Marginal	≥60%
Unsatisfactory	<60

YEAR-END RESULTS:

STI Products – Published during FY2003/Uploaded to DOE-OSTI by close of CY2003

Document Type	Received by STI	Published	Total Announcement Records (PDFs) uploaded to OSTI	% of Published Documents
Journals (IS-J)	105	69	69	100%
Theses (IS-T)*	28	28	28	100%
Conf. Paper (IS-M)	4	4	4	100%
R&D (IS)	2	2	2	100%

** The STI Program is managing approximately 150 theses for Graduate Students who are "pending" graduation.*

The Laboratory submitted 100% of technical reports electronically to OSTI by close of CY2003, which were published during FY2003. The Laboratory continues to meet its goal of providing an electronic copy of our STI products to DOE-OSTI within three weeks of their publication date. Therefore the Performance Level achieved was "Outstanding".

Self-Assessment

Opportunities for Improvement Identified in the 2002 Year End Report

Although there were no specific goals identified in the 2002 year end report, the STI Office has focused on continuously improving the Program's systems and meeting our performance measure of 100% full text electronic submissions to DOE-OSTI InfoBridge. The Office has also worked hard to reach the goal of submitting patent clearance forms to DOE-Chicago on a weekly basis. There has been constant continuing education with the researchers and program assistants to become more familiar with the process. Along with those activities, the STI Office

has worked with the Information Systems department to address the STI Program's needs regarding the upcoming conversion to a new database system.

Significant changes

Significant changes in system procedures or practices include:

- Constructed a write-up on the Scientific and Technical Information database for Information Systems regarding the upcoming conversion of the HP 3000 server. The write-up consisted of a needs assessment of the database and the functions that are currently being used by the program as well as a wish list of future changes to enhance functionality for the STI database.
- A spreadsheet was created to track all completed theses in order for the STI Office to record an on-going count of Ames Laboratory's support in the education of graduate students. This information is provided to the Directors' Office as it supports one of the Laboratory's mission items.
- Prepared a technical information mailing to all Laboratory Researchers, which reviewed the use of our Government Copyright License and provided preprinted labels for use on Transfer of Copyright Forms. The use of preprinted labels saves the Researcher time and ensures consistency on all Transfer of Copyright Forms submitted.
- Prepared a desk procedure on the STI Process, which was shared with several partnering Departments, i.e., Accounting, Purchasing, and Internal Audit. This procedure ensures that Publisher's are paid promptly for all page charges and reprint orders.
- Incorporated "OSTI Submission Date" fields onto the STI Database and performed the data entry of all submission dates from FY2001 to date. This action will allow the development of a report, which will allow quick queries regarding submission counts.
- Created a spreadsheet to capture information regarding the "submissions" of each type of STI Product, i.e., journals, theses, conference proceedings, and research and development reports. This will allow the generation of an information report for the Laboratory's Directors' Office.
- Installed SciFinder Scholar from Iowa State University as another mechanism to search and print full-text electronic documents in the event that reprints are not ordered.
- Program Assistant traveled to the OSTI's Scientific and Technical Information Conference (April 2003) and participated in all OSTI Conference Calls. Regular communications provide Laboratories with a strong network and help direct Ames Laboratory's STI Program activities.

Compliance with DOE Order 241.1 and DOE Guide 241.1.

The objective of DOE O 241.1 is to ensure that STI is identified, processed, disseminated, and preserved in a manner that enables the scientific community and the public to locate and use the unclassified and unlimited STI resulting from DOE's research and related endeavors.

All Ames Laboratory researchers have been instructed to provide copies of Technical Information to the STI Office for processing. Each STI product is identified by the assignment of a unique indexing number, which is tracked on the STI Database.

The processing of the STI product begins with a *Request for Patent Clearance for the Release of an Unclassified Document*, which is prepared and submitted to DOE-CH within a week of the manuscript's submittal to the STI Office. Also, if there is a question regarding a manuscript's patent clearance it is sent through a researcher review before it is released for publication.

Once an STI product is accepted for publication, the researcher will complete a *Transfer of Copyright form*, which conveys the required Government Copyright License Notice per our

Contract. The researcher then authorizes any page charges and/or reprint orders and processes these requests through the STI Office.

The STI Office is sent journal “reprints” by the publisher and an archival copy is pulled and the balance of the reprints are then delivered to the author for the appropriate distribution. The archival copy will be held as a “master” to allow the Laboratory to provide a copy of the document should it be requested by another organization or the Public. Notification of the publication then triggers the preparation of an *Official Announcement Record* and the conversion of the document to the required electronic format for its upload to OSTI. Full-text is provided for all R&D Reports, Conference Proceedings and Theses; whereas, just an *Announcement Record* with citation is provided for all journals.

The closure of a STI file occurs after all of the above processes have been completed. Closed files are packaged at the end of each Fiscal Year and will be entered on the Laboratory’s Records Management Database to assure easy retrieval. These records are secured at the Record Holding Area where they will be maintained permanently. Preserving these records is essential for historical purposes, as well as, providing the scientific community and the public access to these documents.

During CY2003 the STI Program has met all the elements, which are outlined in DOE Order 241.1. To achieve this goal, the STI Office focused on implementing a system that would ensure that all STI Product Announcement Records and electronic full-text documents were submitted to DOE-OSTI by CY2003. In addition, on-going discussions with researchers and program assistants continues to fully convey all STI activities, covering such items as the submittal process, patent authorizations, transfer of copyright, manuscript disclaimers, ordering reprints, authorizing page charge and color charges, etc.

Assess during the fourth quarter of CY2003, the cycle time in making completed technical publications available to OSTI, specifically the elapsed time between (a) clearance release of technical reports and (b) an announcement of those reports to OSTI.

The *Request for Patent Clearance for the Release of an Unclassified Document* is prepared and sent to DOE-CH within one week of a technical report’s submission to the STI Office. Clearance for a technical report from DOE-CH usually averages 6 weeks and may require the performance of a researcher review, which may cause the approval to be delayed by an additional two weeks.

The elapsed time in sending electronic technical publications to OSTI will occur within approximately three weeks of the document’s publication date. However, the STI Office is not automatically notified of a journal article’s publication date if a “Reprint Order” has not been requested by the author; therefore, the STI Office has implemented a process of requesting status updates from our scientific authors inquiring on journals for which we have not received reprints and/or page charge requests.

Since the STI Office, has no control over a publisher’s or conference organizer’s acceptance criteria or timing, it would not be beneficial to provide the elapsed time between an STI Product’s clearance release date and the submission date of that document to OSTI. Typically, journal articles are accepted by most publishing organizations within nine months of their submission date; whereas, all other STI Products are usually accepted for publication within a month of their submission date.

Summary

Opportunities for improvement and/or notable practices.

- Design a web page, which provides the full-text documents of Ames Laboratory STI products, i.e., journals, theses, conference proceedings and research and development reports. This will ready the Laboratory for OSTI Harvesting Initiative once OSTI has the labor resources to implement this program with the Ames Laboratory.
- Construct two new reports from the current STI Database, including a *Technical Information Report Summary*, which will indicate technical information submissions by Scientific Program and an *Automated Status Letter* for tracking and closing each STI submission.
- Continue to provide the Laboratory's Information System Department with assistance regarding the construction of a new STI Database and transferring the existing data as they convert the current server to a different system.
- Draft a modification to the Laboratory's existing *Government Copyright License Disclaimer* to clarify that the manuscript was authored at the Ames Laboratory instead of the Contractor, Iowa State University. Seek DOE-CH approval on the disclaimer's new language and notify Ames Laboratory scientists of the new language for their manuscript's acknowledgement section and Transfer of Copyright Forms.
- Provide semi-annual informational slides to the Director's Office regarding Theses produced with Ames Laboratory assistance and a slide to record annual submissions of STI products.
- Prepare Desk Procedures for the main activities of the Scientific and Technical Information Program to help with future employee training regarding this Program.

Self-Assessment Rating

The Scientific and Technical Information Program continues to meet the requirement of submitting published technical reports in full-text electronic form to OSTI by the close of the calendar year. The STI Program will now focus on developing a web page in preparation for OSTI's future Harvesting Initiative. Furthermore, continued efforts will be made to engage researchers in the STI process and to offer experienced assistance regarding technical information questions and concerns. It is recommended that the STI Program receive a rating of "Outstanding" based upon the accomplishments made during 2003.

INFORMATION MANAGEMENT

System Indicators:

OBJECTIVE 1.0: To manage information resources on a corporate basis using sound business practices to improve the quality and cost-effectiveness of business and administrative systems and work processes.

MEASURE 1.1: Evaluation of evidence that IM plans link IM investments to Laboratory needs.

EXPECTATION 1.1: Objective evidence has been provided to demonstrate that IM activities provide effective support for the Laboratory's operations.

YEAR-END RESULTS:

The IS mission is to provide administrative application development and support; reliable, scalable and easily managed network communication infrastructure, central access to file, print, email, web, FTP (File Transfer Protocol), database and application server support and desktop services support to all Ames Laboratory programs and departments. The IS effort supports the researchers in their endeavor to increase the general levels of scientific knowledge and capabilities, to prepare engineering and physical sciences students for future scientific accomplishments and to initiate nascent technologies and practical applications arising from basic scientific programs.

Project Selection

This year the priorities for IM projects have been determined based on scheduled deadlines for existing operating systems. Since we received notification that the HP3000 operating system would no longer be supported after December 2006, IS, Administrative Managers and Laboratory Directors have made the decision to make the conversion off the HP3000 a high priority project. The SAN/backup device would provide disk storage for new servers purchased for the HP3000 conversion project.

The criteria used to make project priority selection includes:

1. Discontinuing support for hardware/software used at the Laboratory for strategic or sensitive systems.
2. The overall cost of the project.
3. The hardware/software solution selected will be constrained by the budget. Other DOE Laboratories have implemented Oracle and PeopleSoft for their financial applications at costs of > \$1 million. The Ames Laboratory will not consider these systems as possible solutions because of their high cost.
4. The risk of doing nothing.
5. It is possible to continue to use the HP3000 with its current operating system after December 2006. If this decision is made, unintended consequences could result. The hardware components on the HP3000 may be difficult to obtain after December 2006. Expertise may not be available to provide operating system support in the event of a system failure.
6. Meeting mission needs.
7. The Administrative Offices provide financial and administrative assistance to the researchers as they conduct fundamental research for the DOE. If the network is down, the researchers are not able to complete their tasks. If the administrative systems are not functioning correctly, they cannot adequately account for the costs of their projects. If the central servers are not functioning, they are not able to communicate (email, FTP, web, file/print)

within and outside the Laboratory. If their desktop systems are not functioning, the researchers are not able to get their work done.

Control Process

The Budget Officer annually requests budgetary information for fiscal year projects. Small projects (costing < \$1000) can be funded through base budget funding. Projects costing > \$1000 are included in incremental requests and discussed with the Chief Operations Officer (COO) and the Laboratory Director.

Throughout the fiscal year, the IS manager regularly meets with the Chief Operations Officer (COO) and Budget Officer to discuss project scope, progress, and costs. The Budget Officer incorporates IS major projects in all required DOE budget documents.

Evaluation Process

Our quality assurance system provides the opportunity for administrative staff to request changes/enhancements to administrative systems. The IS programmers are continually working with the administrative staff to ensure that the project is meeting expectations for that office throughout the life cycle of the system and especially during design, programming and testing phases. Once a project is implemented, the IS staff talks with end users to evaluate whether or not the project met expectations.

The IS Help Desk is available for all Laboratory staff to pose questions, request information, submit computer/networking enhancements and provide feedback on IS issues.

Current IT investments:

- Procured hardware and software maintenance contracts for administrative third party software, network equipment, central email and file/print services, UPS and copier. The maintenance contracts provide technical support for all covered items when the equipment breaks or malfunctions and the software fails when additional technological expertise is needed to get the equipment or software functioning again.
- Procured J2EE application development software, Optimal J, for the programmers for use in developing administrative applications.
- Completed the procurement of migration services to assist in determining direction for the migration off the HP3000. The company that performed the migration is considered a Platinum Partner with HP. They have the knowledge base and experience to provide guidance on migration methodologies, significant event management, performance and capacity planning.
- Completed the procurement of memory to upgrade the cards in the Cisco 7513 and 7505 routers. This additional memory allowed us to upgrade to Cisco IOS v 12.x. This upgrade provided the means for the scientific research groups to implement multicast.
- Procured blade/card upgrades for our Avaya switches located in Wilhelm and Spedding. If the blade/cards are not upgraded, the switches go off maintenance in March 2004. This places our network in a vulnerable situation if the cards/blades fail. The P550 switches provide the core network connectivity throughout the laboratory.
- Procured the Storage Area Network (SAN) that will provide 1 terabyte of available disk space for web, file/print, database and application services.

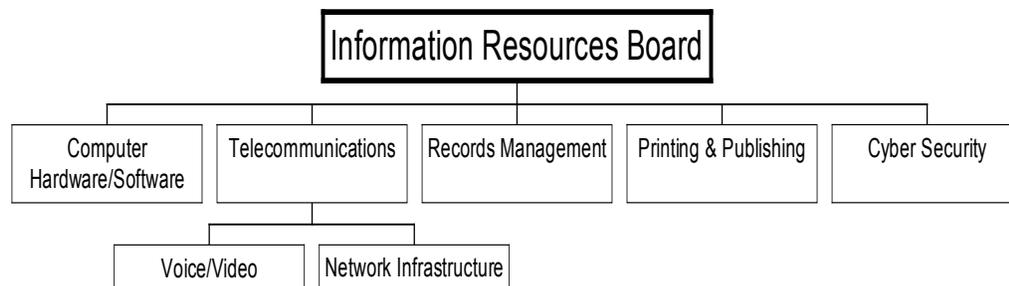
Self-Assessment

Background

Scope and Organizational Overview

The functional self-assessment report will review all activities under the jurisdiction of the Information Resources Board (IRB). The IRB had its inception in June 1997. The board was

tasked with creating an Information Management Strategic Plan and with developing plans to promote a strong Information Management Program. The Laboratory's Information Management Program addresses the following activities: Information Systems, Cyber Security Program, Documents and Records Program, Telecommunications, Computer Network Infrastructure, and Printing and Publishing (see below).



The mission of the Information Resources Board is to comply with requirements of the Prime Contract and meeting the contractor requirements as outlined in the Information Program Order (O 200.1). The Board will serve in an advisory capacity to the Director, recommending policies and procedures for the management of information activities. Because of the various functions incorporated in the Information Management area, each area will be detailed separately below.

Information Systems

Background

Scope and Organizational Overview

The mission of the Information Systems department is to provide administrative application development and support; central access to file, print, email, and application servers; reliable, scalable and easily managed network communication infrastructure; and desktop services support to all Ames Laboratory programs and departments.

Recent Concerns and Related Actions

The last appraisal that Information Systems underwent was held in May 1993. ADPE Management and Computer Software Management were given an "Outstanding" rating.

Process Management

Key Activities and Service

The main tasks of administrative applications are to create and maintain complex computer systems for the Technical and Administrative Services Division and other support departments at the Ames Laboratory. An executive information system is available for all Program Directors and Office Managers to view and retrieve financial, procurement and other business system data.

The main task of the central servers is to provide appropriate and adequate performance, sufficient disk space and reliable access to the central file, print, email, web and application servers. Management of these servers includes setting up user accounts and access rights, performing operating system upgrades and backups, and assuring adequate resources are available to Ames Laboratory staff. The main task of desktop services is to provide a central Help Desk for logging and tracking trouble calls. Desktop support covers all desktop devices including PC, MAC, and UNIX devices, hardware and software installs, and software site licensing contracts. Support is available to all Laboratory staff.

Assessment Criteria

The programmers for the administrative applications are using client-server tools for developing state-of-the-art administrative systems. The World Wide Web will be utilized when appropriate for deploying administrative applications. System change requests are evaluated to assure appropriateness of the programming change. The central network servers are evaluated regularly to assess problem areas with hardware or software configurations. By providing access rights to work teams (individuals in multiple departments) and groups (individuals in the same department) on the central servers, productivity has increased for those teams/groups because necessary information and data are available to those teams/groups. Regular backups occur on the servers to assure data can be restored in the event of an accident or mishap. The desktop support staff provides prompt and reliable service to Ames Laboratory staff requesting desktop service. All calls are logged and reviewed daily to assure prompt attention to the requestor.

Business Results

Areas of Excellence

Annual reviews are conducted with each office requiring administrative application support. The programming requests are prioritized. As one assignment is completed, the next one begins.

Effort has been made to reduce costs and increase efficiency by utilizing network services. File/print services utilize Novell Netware on an Intel system. A centralized external web server has been implemented to provide the ability for Laboratory staff to create, maintain, and publish web pages for their department. A centralized internal web server has been implemented to provide the ability for Laboratory staff to create, maintain, and publish web pages for their department to be viewed only by Ames Laboratory staff. Email services utilize the Digital Unix operating system along with Process Software's PMDF email software.

Desktop support calls are handled daily. A manual call tracking procedure, indicating the problem and resolution including sign-off by the requester, has been implemented to better track the desktop support calls.

Summary

Areas of Excellence

- Began discussions on HP3000 conversion.
The first phase of this project is complete. We are in the first phase of the migration off the HP3000 platform: determining and outlining our options for an alternative platform. The Ames Laboratory purchased migration services from Lund Computing to assist in evaluating our current system design and determining the migration path for the Laboratory. The programming staff completed the analysis and inventory of the current administrative systems to determine what jobs, programs and databases are in use.
- Enhanced Shops system.
IS staff have completed minor enhancements to the Shops system. This system allows the Shop staff to retrieve cost information on the Job Orders. At midyear, IS reported that there was one more enhancement that needed to be complete. IS staff will add the overhead calculation to the Job Order screen display. This functionality will not be implemented in the Shops system. It was determined that the information was available from a spreadsheet.
- Evaluate Storage Area Network devices.
This project is complete. The SAN was purchased in September 2003 and implemented in November 2003.
- Evaluate financial applications for HP3000 migration.

All administrative managers and IS staff have been involved in the review of financial software. We have conducted an extensive review of Deltek's financial management system. We have had one demonstration from Oracle covering their database and application development software and one demonstration covering their General Ledger (GL). We have been in phone communication with IFS (www.ifsworld.org) and anticipate a demonstration from this company in early 2004. We have sent extensive requirements documentation to Mitchell Humphrey & Co. (our current GL vendor) to inquire how they could better integrate our existing COBOL applications into their financial modules.

- Review and update the telephone system.
This project is complete.
- Review and update the accrued vacation system.
This project will be on the "Opportunities for Improvement" list for completion in 2004.
- Eliminate the Chart of Accounts TDP file.
This project is complete.
- Implement Java version of Credit Card and Service Order Request.
This project is complete.
- Develop documentation for installing desktop software.
This project is complete. Completed virus scanning installation documentation. Completed documentation for Windows 2000, VPN client setup, and Red Hat Linux authentication for using LDAP with PAM (Pluggable Authentication Module).
- Implement open source Desktop ticket tracking system.
This project is on hold and will be removed from the list. If a CMMS package is purchased, an open source Desktop ticket tracking system will not be implemented because this function will be included in the CMMS package.

Opportunities for Improvement

- Review and update the accrued vacation system.
- Make appropriate programming changes to accommodate I-MANAGE.
- Evaluate and implement options for retrieving and populating July 1 assignments.
- Develop Foreign Visits and Assignments system.
- Continue evaluating financial applications for the HP3000 conversion.
- Decide hardware/software purchases for HP3000 conversion.
- Upgrade email system.
- Split e-mail server into e-mail MTA and e-mail mailbox components.
- Create disaster recovery CDs for each server for use with new Tivoli backup system.
- Explore migration paths for current RH (Red Hat) Linux servers.
- Develop automated vacation response.
- Develop user forum for desktop support calls.
- Upgrade Netware to version 6.5.
- Upgrade Groupwise.

Telecommunications

Background

Scope and Organizational Overview

Telecommunications is one of the Functional Elements of the Functional Area of Information Management. The mission of the Telecommunications Functional Element is to ensure appropriate telecommunications services are available to Laboratory personnel while at the same time controlling the level of service to only the services/features necessary to perform job functions thus minimizing cost to the Laboratory.

Telecommunication services are provided by Iowa State University (ISU). The ISU voice system is a University-owned AT&T G3 switch/controller located in the Mechanical Engineering Building on the ISU campus. The ISU system has 20,000 information outlets; Ames Laboratory uses approximately 400 of them. There are no switches, consoles, or operators located within government owned or leased space. The Ames Laboratory has contracts with Verizon Wireless for cellular phone service and utilizes an in-house radio communications system for on-site paging and mobile radio communications. An FTS T3 circuit provided by NERSC is employed for Esnet and a commercial line is utilized to provide Video Teleconferencing capability.

Responsibility for Telecommunications is divided among the Information Services Group for data services, which are discussed separately, and the Facilities Services group for voice services and for internal wiring of both voice and data. The effort expended by the Facilities Services group to coordinate installation, wiring, and process trouble calls requires approximately 0.33 FTE employees throughout the course of a year.

Process Management

Key Activities and Services

The Telecommunications Functional Element serves the entire Ames Laboratory to act as a focal point for obtaining telephone service and arranging for installation of both telephone and data wiring. Phone service requested must be balanced between customer requests and DOE GUIDE 200.1-5 - CALL CONTROL/VERIFICATION PROGRAMS AND AUTHORIZED USE OF GOVERNMENT TELEPHONE SYSTEMS that mandates only the level of service required to perform job functions.

Business Results

Assessment Criteria

Actively coordinate with ISU on phone orders and repair calls.
Address all telephone issues in a timely manner.

Computer Network Infrastructure

Background

Scope and Organizational Overview

Computer Network Infrastructure is one of the subsets of the Telecommunications Functional Element. The mission of the Network Infrastructure division of Information Systems is to provide a secure, reliable, scalable, and easily managed computer communication resource. This is done by using a layered topology throughout enabling localized areas to have enhanced communication bandwidth without adversely affecting other users. By using a combination of switched (layer 2) and routed (layer 3) message forwarding hardware, a balance has been attained between speed and functionality in the load optimization throughout the network. A border router provides additional filtering capabilities and network intrusion detection at the DMZ monitors all inbound traffic.

Process Management

Key Activities and Services

The main tasks of Network Infrastructure fall into two categories: Maintenance and Update. The maintenance cycle is driven by monitoring of the managed network hardware and by reacting to user trouble tickets opened by calls to the help desk. Since all members of the Laboratory make use of e-mail, the customer base is extensive, and the impact of disruption to information flow throughout the Laboratory is immediate if a component in the network should fail. Through monitoring, redundant power supplies and an extensive, onsite inventory of replacement network components, the downtime and maintenance costs, are kept to a minimum. Due to the modular nature of the network, units can be updated to deal with expanding user needs on a case by case basis as necessitated by the shift of information sharing throughout the Laboratory. In addition, there is a need for network support for file sharing and printing, both of which are mission critical and require a quick response to, and remediation of, user issues.

Process Management Assessment Criteria

The level of customer satisfaction is directly related to the supply of reliable network service and throughput. Since the network is designed to be flexible in its topology, the main aim of network management is to locate areas of congestion before they become noticeable to the user and to upgrade that segment according to a schedule that has minimum impact to the user and a holistic view of network growth in mind.

Business Results

Business Results Assessment Criteria

Customer satisfaction is determined by the turnaround time on open trouble tickets and efficient routing of these to the correct member of staff.

By close collaboration of departments within the Laboratory, increased discounts are obtained by combining purchase orders, whenever possible. In addition, this leads to a more efficient pooling of resources and better user services due to an extended community of on-site expertise. By standardizing on Ethernet for all layers of the network infrastructure, the network topology has been simplified while ensuring that the Laboratory has access to cutting-edge technology, yet makes good use of existing wiring and hardware.

Summary

Areas of Excellence

- Decommissioned Thick and Thin wire services in all Laboratory buildings.
This project is complete. We are moving network connections off Thick and Thin wire (older wiring) to Fast Ethernet. Thick wire was in Physics Addition and thin wire was in Spedding.
- Eliminate Appletalk throughout the Laboratory.
This project is complete. Appletalk protocol is no longer used. The message has been distributed to all programs/offices explaining that the Appletalk protocol will no longer be supported by ISU. The ACPMs for each program/office have been asked to inventory their MAC devices and report back to IS on a plan of action for eliminating the Appletalk protocol from their program/office.

Opportunities for Improvement

- Documented connections on network ports.
This project is in progress. In addition, to the existing documentation of network ports, IS would like to develop a database containing more detailed information of network connections for ease of tracking network devices.

- Implement DHCP.
In process. IS Network Infrastructure (NI) staff have held two meetings to discuss the implementation of DHCP at the Laboratory. In 2004, we will evaluate and install NetReg and IP/DHCP web tool for use with DHCP.
- Evaluate the current router configuration in anticipation of replacing either the perimeter router or internal router.
In process. In IS NI staff meetings we have discussed the current network configuration to better understand laboratory routing needs.
- Implement the new blades/cards purchased for the P550 switches in Wilhelm and Spedding.
- Decommission DEC equipment previously used to network the Laboratory.

Self-Assessment Rating - Overall IM

The overall subjective rating for the IM functional area is "Outstanding."

SAFEGUARDS AND SECURITY

System Indicators:

OBJECTIVE 1.0: A safeguards and security program shall be implemented that ensures compliance and performance with safeguards and security requirements and development of an Integrated Safeguards and Security Management (ISSM) System.

MEASURE 1.1: The Site Security Plan is in place that addresses applicable topical areas of the Safeguards and Security Program.

EXPECTATION 1.1: Self-assessment documentation reflects how safeguards and security program elements were evaluated and the resultant evaluation of the elements.

Corrective actions or compensatory measures for deficiencies which involve nuclear materials or security interests at risk are implemented immediately.

Corrective actions are monitored until resolved.

YEAR-END RESULTS: Ames Laboratory issued an updated Site Security Plan in 2003. Comments received from DOE-CH and AAO were addressed and the Director of Safeguards and Security Services for DOE-CH approved the Site Security Plan, dated June 15, 2003. In September, after the 2003 Safeguards and Security Inspection of August 13-14, Ames issued a revision (Revision 5) of the Site Security Plan to address a suggestion related to Foreign Visits and Assignments General Security Plan. The text, noted below, was added as *Section 3.5 Foreign Visits and Assignments General Security Plan*.

DOE Notice 142.1, Unclassified Foreign Visits and Assignments, requires two types of security plans to be used to control visits and assignments by foreign nationals to Ames Laboratory. A Specific Security Plan (Form 10200.142) is required when a foreign visitor or assignee is from:

1. a sensitive country or is accessing sensitive information where the host has a DOE access authorization,
2. a sensitive country accessing sensitive information, or
3. a terrorist supporting country.

All other foreign visits and assignments require a General Security Plan. The Ames Laboratory Site Security Plan is the General Security Plan for the foreign visits and assignments program.

The Ames Laboratory Corrective Action Tracking System (ALCATS) is utilized to track S&S corrective actions. All corrective actions have been addressed except compliance with DOE N 205.2 (DOE N 205.2 is not in the Ames Laboratory Contract).

MEASURE 1.2: Vulnerability Assessments accurately address current Laboratory operations.

EXPECTATION 1.2: The assumptions made in vulnerability analyses are accurate and applicable.

YEAR-END RESULTS: In 1991, the Ames Laboratory conducted a Vulnerability Assessment (VA), adopting a form and technique originally used at Fermilab (Fermi National Accelerator Laboratory). The format used data collected from the groups and departments within Ames Laboratory to assess the value and importance of real and personal property at the site. The same concept was used to revisit the subject in 1999, although the form was altered to allow database entry and additional data regarding flammable fuel loading. Several additional door sensors were installed as a result of the VA.

In 2002, the Ames Laboratory received information from the Story County Emergency Management Agency regarding a 2001 US Department of Justice terrorism assessment made of Story County. When additional information becomes available, it will be used for future updates of the Laboratory vulnerability assessment.

An unclassified version of the DOE Design Basis Threat (DBT) Policy was transmitted to Ames Laboratory for review and comments. Upon review, Ames determined that the new DBT will have no impact on the Laboratory and that an implementation plan is unnecessary.

On May 20, 2003 the Deputy Secretary issued the latest version of the Design Basis Threat (DBT). As usual, the DBT is a classified document. An unclassified version may be available in the future. In the interim, Ames is relying on DOE-CH's review of the DBT and the subsequent communication of information relevant to the Ames Site Security Plan. To date, additional issues have not been communicated to Ames. When additional relevant information becomes available, it will be used for future updates of the Laboratory vulnerability assessment.

MEASURE 1.3: The Laboratory maintains a Nuclear Materials Accounting System which reflects nuclear material activity, including physical inventory results and reconciliation.

EXPECTATION 1.3: The nuclear material accounting system completely, promptly, and accurately documents activity in accordance with Generally Accepted Accounting Principals and DOE Orders.

YEAR-END RESULTS: Ames Laboratory completed a physical inventory of nuclear materials in May 2003. There were no discrepancies noted during the inventory. The database, that was recently developed, allows for easy tracking and summation of inventory values, straightforward accounting for material transfers and much easier quarterly report generation to required parties.

In the event that Ames Laboratory should pursue nuclear materials research more heavily in the future, an adequate accounting system is in place.

Ames Laboratory utilizes a Microsoft Access database to record and track radioactive materials inventory. The database has all MC&A materials entered. A very small amount of material, less than 5 kg, has been identified as necessary for future research activities. Ames is currently seeking permanent disposition of unneeded materials. All materials will be tracked on the database until they are properly disposed.

In May 2003, a complete physical inventory of the nuclear source materials was conducted. This was done following the packaging of a very large percentage of the Laboratory's existing inventory for shipment to Hanford Solid Waste Disposal Site. Although, no material inventory additions are planned, the existing database is continually improved, recently adding pictures of materials in inventory to aid in future disposal and inventory efforts.

MEASURE 1.4: The Laboratory implements a graded ISSM system for the protection of DOE property and security interests.

EXPECTATION 1.4: The Laboratory effectively implements ISSM.

YEAR-END RESULTS: Ames Laboratory utilizes an integrated approach to most of its management programs. Safeguards and Security Management processes are specifically targeted as line management's and support group's responsibilities. As such, the S&S responsibilities are typically coordinated with other functional responsibilities, such as, safety, property management, personnel and project management, and information management. Ames has prepared an ISSM description to serve as a road map to the processes and mechanisms utilized for protection of DOE property and security interests. This document will be finalized and approved in 2004.

MEASURE 1.5: The Laboratory will maintain a graded nuclear material control program to ensure that: nuclear materials are in authorized locations with appropriate protection measures in place; unauthorized activities, material flows, and material transfers are detected; appropriate protective measures are in place for transfers of nuclear materials; and anomalies are reported, investigated and resolved.

EXPECTATION 1.5: The Laboratory's self-assessment will indicate effective implementation of this program.

YEAR-END RESULTS: Ames Laboratory has successfully decreased its nuclear materials inventory throughout CY2003. The bulk of remaining materials remain in Health Physics possession in a locked and alarmed room with multiple key access limited to Health Physics staff. The last substantial nuclear materials research group at Ames Laboratory has shut down its nuclear materials processing and decommissioned its laboratory space. This will all but eliminate nuclear materials transactions at Ames Laboratory other than proper disposal of remaining unutilized materials.

In December 2003, the ESH&A manager and the ISU RSO conducted an MC&A Program Topical Appraisal. The appraisal did not discover deficiencies of the program's design or implementation, although a few opportunities for improvement were noted and related actions were initiated.

MEASURE 1.6: Incidents of Safeguards and Security concerns are detected, reported, investigated and resolved.

EXPECTATION 1.6: The Laboratory effectively implements this program. Concerns are accurately and completely detected, reported, investigated, and resolved.

YEAR-END RESULTS: Although Ames has not experienced incidents exceeding the reportable threshold, incidents including a minor break-in and one reported theft of personal property have been detected and investigated. Ames has incorporated the reporting of incidents of safeguards and security concerns into its Events Report Program.

Compliance Items:

None.

Self-Assessment

Opportunities for improvement identified in 2002

Opportunities for improvement were identified primarily through Independent Walk-Through efforts, concerns raised through the Ames Area Office surveillance program, causal factors identified during event investigations, observations by specialists and the development of this Self-Assessment report. The improvements planned for CY2003 were addressed as follows:

- Ames Laboratory will continue to seek opportunities to reduce inventory of radiological materials.
Status: *Ames Laboratory greatly reduced its inventory of radioactive materials in 2003. We successfully disposed of 56/66 kg normal Uranium, 14/36 kg depleted Uranium, 36/37 kg Thorium, and a 1-Curie Plutonium/Beryllium sealed neutron source. The laboratory also transferred a 9-Curie Cs-137 sealed source and a 2.15-Curie Americium/Lithium sealed neutron source to Argonne National Laboratory West. These sources will be used in further DOE research activities.*
- The Laboratory's Export Control Checklist form will be reviewed and updated during 2003.
Status: *The Export Control Officer reviewed the Export Control Checklist form twice during 2003. The last update to the form was made on 9/1/03.*
- The Laboratory's Sensitive Technology list will be updated during 2003.
Status: *The Export Control Officer updates the Laboratory's Sensitive Technology list as required when the Laboratory receives funding for projects that are either Official Use Only, or considered Sensitive in nature by the funding agency or industrial partner. In 2003, the last update was made on 10/16/03.*

Significant Changes

Plant Protection Section continues to conduct additional tours of facilities. Reviews of PPS tour packages and monitoring logs of the Simplex security system are routinely performed.

In December 2003, the ESH&A manager and the ISU RSO conducted a review of the Laboratory's MC&A program. The appraisal included a review of the Materials Control and Accountability Program Plan (Plan 10202.002), a review of selected quarterly material balance reports, a review of selected inventory reports, a demonstration of security controls and observation of materials storage in B53 Spedding Hall. The review did not discover deficiencies of the program's design or implementation. Several suggested opportunities for improvement surfaced during discussions among the reviewers and the Laboratory's RSO. These opportunities are summarized as:

- Plan 10202.002, *Materials Control and Accountability Program Plan* should be updated to reflect the latest directives after these directives have been listed in the Ames Laboratory Contract.
- Documentation, including the performance of annual inventories, the calibration of scales, the issuance of quarterly reports, and the completion of transaction reports should be accompanied by a memo to file in order to provide additional information. Electronic copies of MC&A databases, reports and documents (except Plan 10202.002) should be kept in a designated location, as should signed hard copies.

- Reminders should be developed and entered into ALCATS to track the performance of annual activities, including calibration of scales and physical inventories.
- A key to B53 Spedding should be encapsulated and kept by Plant Protection Section for emergency access.

Ames has prepared an ISSM description to serve as a road map to the processes and mechanisms utilized for protection of DOE property and security interests. This document will be finalized and approved in 2004.

Ames continues to respond quickly and thoroughly to changes in Security Conditions as requested by the DOE.

Ames continues to improve the MC&A program through inventory reduction of unutilized materials and implementation of a computerized tracking system for materials accountability. Efforts to minimize the Laboratory's inventory of radiological materials are now focused on finding disposal paths for problem items. Ames Laboratory greatly reduced its inventory of radioactive materials in 2003.

Ames has developed its badge making process into an in-house service in order to provide better customer service.

In August 2003, the DOE Chicago Operation Office's Safeguards and Security Section performed a Safeguards and Security Inspection of Ames Laboratory. An overall rating of "Satisfactory" was assigned. The inspection identified three suggestions for program enhancements in the unclassified Foreign Visits and Assignments Program. They were as follows:

1. Specifically identify the Laboratory's Site Security Plan as the General Security Plan required in the N.142.1 and the McSlarrow guidance.
2. Complete the Specific Security Plans for those foreign visitors where this is required.
3. Update the desk procedures of the Ames POC for processing foreign visitors and form AL473.

As mentioned earlier the Laboratory's Site Security Plan was updated in 2003 to address the conditions for Specific Security Plans and to designate the Site Security Plan as the General Security Plan when the conditions for a specific plan are not met. Also, during 2003, Specific Security Plans were completed for all foreign visitors where the conditions for a specific plan were met. The update of the desk procedures is underway, but not complete. The requirements of the McSlarrow guidance has added a great deal to the process for handling foreign visitors and we are focusing on keeping up with those requirements. For example, the Ames POC is busy working with hosts on the semi-annual review of the sensitive country visitors. These extra steps reduce the time available to update the desk procedures.

Foreign Visits and Assignments – In December 2002, Kyle McSlarrow issued guidance for reporting foreign visits and assignments by all laboratories. The guidance required the development of an implementation plan and it provided milestones for reporting the foreign visits. Ames has met the deadlines imposed for the development of the plan and for reporting the visits. New staff had to be added to handle the increased workload. Two of the staff attended training on FACTS at FERMI. This training was very beneficial. During the August 2003 Safeguards and Security Inspection Yvonne Washington helped establish a baseline for

our program. The suggestions for improvement and the corrective actions are listed above. We are completing the semi-annual review of the sensitive country foreign nationals.

Foreign travel – In 2003 foreign travel decreased. In 2002 Ames Laboratory posted 99 trips into FTMS. In 2003, 82 trips were entered. The addition of a requirement to obtain Country Cables for all foreign travel has slowed the approval process for non-sensitive travel. We are currently working with the Ames Area Office to improve this situation. The main focus for improvement in foreign travel is submission of trip reports in a timely manner. In 2003, 53% of the reports were submitted on time. We have instituted changes that should improve those statistics. Though we are still working on improving our timeliness, we are far ahead of prior years, in that trip reports have been submitted for all completed trips. This is a first. Overall, the foreign travel process is in better shape than in the past.

Reviews by the Laboratory's Export Control Officer are utilized to identify potential Export Control considerations and sensitive activities. If a funded activity falls under the Export Administration Regulations, or under the DOE's sensitive subject list, it is added to the Laboratory's Sensitive Technologies list. The principal investigators and their Program Managers are sent letters informing them that the research is sensitive and that if at any time any foreign nationals will be working on the project, an Export Control Review must take place before hiring or assigning them to the project.

The IG performed a review of the Export Control and the FV&A programs September 30 and October 1, 2003, specifically deemed exports at Ames Laboratory. The objective was to review deemed exports and the understanding of deemed export by management, researchers, and scientists in relation to funded projects at a University-contracted Laboratory. In the closeout, IG personnel stated that there were no critical findings. A final report is expected on their findings in the 2nd quarter of FY2004.

Summary

Opportunities for improvement and/or notable practices

Opportunities for improvement have been identified through observations and the development of this self-assessment report. The improvements planned for CY 2004 include:

- Ames Laboratory will further develop plans for disposal of remaining unutilized radiological materials.
- It is anticipated that the above-mentioned IG report will have a few findings. During 2004, these findings will be addressed.

Self-Assessment Rating

Based on the Safeguards and Security System Indicators, the Safeguard and Security self-assessment results documented herein and the improvements continued during 2003, the Laboratory's overall assessment indicates "Outstanding" performance in the area of Safeguards and Security.

CYBER SECURITY

System Indicators:

OBJECTIVE 1.0: Develop and maintain a comprehensive cyber security program at Ames that is consistent with DOE directives and guidelines.

MEASURE 1.1: Ensure that Ames develops and implements the elements of a sound cyber security program that establishes appropriate protection for the Ames computer systems and data.

EXPECTATION 1.1: Perform quarterly network vulnerability scans on network systems that provide communications services visible to the public Internet community. Ensure that the identified moderate to high risk vulnerabilities, as defined by the Ames Laboratory Threat Risk Vulnerability Assessment, are addressed through corrective action or document the reasons for accepting the risk. Justified exceptions can be approved by the Ames Area Office. Identified vulnerabilities with a high rating will be addressed within 40 business days of discovery and moderate vulnerabilities within 80 business days.

<u>Performance Level</u>	<u>% Vulnerabilities addressed within schedule</u>
Outstanding	97%-100%
Excellent	95%-96%
Good	90%-94%
Marginal	<90%

YEAR-END RESULTS: Ames Laboratory network vulnerability scans of externally accessible computing systems were performed in February, May, and September of 2003. Technical configuration changes to the network used for external scans delayed the fourth quarter scan until January of 2004. Results from the scans with suggestions for addressing the identified vulnerabilities were sent to the system administrators who had systems with high and medium vulnerabilities. The system administrators responded with corrective actions or justifiable exceptions to corrective actions. Systems with outstanding issues were the result of unavailable vendor supplied patches. A likelihood, impact, and risk level review of the systems with moderate and high vulnerabilities resulted in an overall risk assessment rating of low. We concluded that further approval by Ames Area Office was not necessary. The Ames Laboratory year-end results for Expectation 1.1 warrant an "Outstanding" performance level rating.

EXPECTATION 1.2: Perform network vulnerability scans on the Ames Laboratory internal network systems so that 1/2 of the network scans are completed each year. Ensure that identified high and moderate vulnerabilities on identified critical and/or sensitive systems are addressed through corrective action or document the reasons for accepting the risk. Identified vulnerabilities on identified critical and/or sensitive systems with a high rating will be addressed within 40 business days of discovery and moderate vulnerabilities within 80 business days.

<u>Performance Level</u>	<u>% Vulnerabilities addressed within schedule</u>
Outstanding	96%-100%
Excellent	91%-95%

Good
Marginal

85%-90%
<85%

YEAR-END RESULTS: Ames Laboratory scanned internal networked computing systems February, October, and December. The Ames Laboratory network segments scanned in 2003 included subnets that contained over 600 of the 1000 plus connected systems. Computing systems with high and moderate vulnerabilities were identified and system administrators were notified. Corrective action guidance was provided in the correspondence. Follow up correspondence with system administrators and additional system vulnerability scans are ongoing to verify that corrective actions are being taken. Network activity and analysis of activity that has the potential to result in vulnerabilities are under continuous review to mitigate risks associated with the introduction of malicious software. The Ames Laboratory year-end results for Expectation 1.2 warrant an "Outstanding" performance level rating.

Compliance Items:
None.

Self-Assessment

Opportunities for Improvement Identified in 2002

- Install detection and vulnerability testing to the network for wireless networks.
Status: *The Laboratory has installed a wireless network device scanning and detection tool to its cyber security system tools. Surveys of the area have been performed to generate a baseline of activity.*
- Develop wireless network best practices and use policy.
Status: *A wireless network policy has completed and is in final draft review.*
- Develop a modem discovery system to identify unauthorized modems connected to systems attached to the Ames Laboratory network.
Status: *An unauthorized modem discovery system was successfully added to the vulnerability analysis procedures. This application will be operated on a random basis (with a minimum of 4 times per year). The initial operation was completed in April of 2003 and no unauthorized modems were detected. Quarterly scans are scheduled for January, April, July, and October of 2004.*
- Implement IPSEC (IP SECURITY) software.
Status: *Secure access to the Laboratory network has been improved with the expansion of virtual private network (VPN) technologies. Documentation on the configuration and use of VPN services for Windows systems is completed and users have been added. Effort continues on providing IPSEC services for all computing platforms.*
- Efforts will be undertaken to consolidate and update Cyber Security Program documentation.
Status: *To comply with DOE requirements for DOE O 205.1 the Ames Laboratory is in the process of creating Security Plans for the computing environment General Support System (GSS) and Major Applications (MA). Definitions for a GSS, and MA, and the Rules of Behavior for each have been completed. Revisions to the Ames Laboratory cyber security guide have been completed. Development of a risk management plan, and the identification of sensitive systems are in process. The Ames Laboratory submitted its System Level Plan of Action and Milestone (POAMs) to DOE officials which satisfies DOE's Cyber Security performance measurement efforts and promotes*

ongoing security self-assessments as required by law. A suspicious activity reporting process was developed.

- Review public Internet accessible system authorization:
Status: *To comply with Ames Laboratory system security best practices all computing systems that provide access to the public Internet require annual reauthorizations. Systems have been reviewed for accuracy and the system administrators have been contacted to complete a reauthorization agreement.*

Significant Changes

Computing system and network vulnerability analysis data from the network monitoring applications assist in categorizing and characterizing the type of traffic that flows through the Ames Laboratory network. These analysis tools are effective in providing information to system users and administrators that assists in complying with Ames Laboratory and DOE policies and rules of behavior.

The Ames Laboratory cyber security environment continues to evolve. Information to improve the awareness of security issues and best practices on how to mitigate risks are available to computing users from the internal web site. Communications with system users and administrators are effective in providing information necessary to assure compliance with Ames Laboratory and DOE policies.

Updates to the applications for vulnerability scanning have improved on the usefulness of the results. Additional tools for analysis and detection have increased the effectiveness of the security staff to identify and isolate vulnerabilities and provide corrective notifications. This improved response capability has mitigated damage to the Ames Laboratory network. The data assist the system administrators in addressing corrective actions. Network traffic analysis systems added to the Ames Laboratory cyber security program include the following:

- Ntop: a network traffic probe that shows the network usage.
- EnCase: a forensics analysis application that provides a comprehensive analysis of systems for forensics and recovery of data on corrupted or damaged data disks. It is a powerful network-enabled incident response and computer forensics system that provides immediate and thorough forensic analysis of volatile and static data on compromised servers and workstations anywhere on the network.
- PGP: a public private key (PKI) email encryption application is available to users for the encryption of messages for email transmissions.
- Thawte Certificates for SSL (Secure Socket Layer) access to email and web services are available for installation.
- External Wireless network antenna producing false wireless networks adds security enhancements by obscuring the existing wireless networks.
- Ames Laboratory was added to the Pacific Northwest National Laboratory sponsored program Cooperative Protection Program (CPP). The CPP supports the goal of protecting the DOE information assets by generating summary information about traffic crossing through the laboratory Internet boundary.
- Inprotect: an open source web interface for the Nessus and Nmap security scanners.
- Phlack: a Linux distribution that incorporates the mainstream computer security tools such as: nmap, nessus, snort, the coronor's toolkit, ethereal, kismet, hunt, achilies, brutus, and others.
- Kismet: a wireless network-sniffing tool that is installed on a roaming laptop computer to assist in the identification and location of wireless access points in the area.

Ames Laboratory had no reportable cyber security incidents in 2003.

All corrective actions identified in the September 2001 Safeguards and Security Inspections have been addressed except for compliance with DOE N 205.2. Based upon recent communication from Ames Area Office, efforts have been initiated to implement processes compliant with DOE N 205.2.

Process Management

Effectiveness of Cyber Security

The addition of firewall services, network and host scanning tools, intrusion detection systems, host forensics analysis tools and cyber security access controls has reduced the vulnerability of the Ames Laboratory network. Identifying a specific set of systems that provide Internet services for the laboratory reduces the effort necessary to safely secure cyber systems.

Changes to firewall access rules are requested by the Assistant Computer Protection Manager (ACPM) or system administrator in writing to the Computer Protection Program Manager (CPPM). This request is evaluated on the impact it has on internal security by the CPPM and system administration staff. If the request is determined to be unacceptable, the CPPM and system administration staff works with the requestor to find a suitable alternative. In the event the access rule is determined to be acceptable, firewall access rules are modified and the change logged in the firewall configuration log. The requestor of the change to the access rules is notified of the change and is required to verify the need for the rule annually.

In all situations, the current internal procedures are working well. It is advantageous to maintain these documentation standards in all Information System (IS) areas to ensure continuity. With a relatively small IS staff it is important for the system administrator to maintain adequate records on changes and modifications. If the system administrator is unavailable for an extended length of time, another IS staff member can determine what has occurred in order to make decisions on what action now needs to be taken. In addition, cross training is necessary to ensure knowledge of systems and devices across various hardware and software platforms is maintained. These cross-training efforts need to continue to ensure sufficient coverage of Laboratory systems and devices.

Summary

Opportunities for improvement and/or notable practices

Opportunities for improvement have been identified through observations and the development of this self-assessment report. The improvements planned for CY2004 include:

- Complete Revision of CSPP
- Complete the certification and accreditation (C&A) process for the Ames Laboratory enclave.
- Continue to expand the VLAN technology to further segment network traffic and isolate administrative traffic from research traffic.
- Expand the installation of Thawte public key Certificates on external systems.
- Complete Self-Assessment based on NIST 800-26 and/or recommendations from DOE.
- Complete Control Analysis and baseline documentation for desktop devices.
- User education: Organize user-training modules for system administration on Linux operating systems.
- Conduct peer review for Cyber Security Program.

Self-Assessment Rating

Based on the Cyber Security System Indicators, the Cyber Security self-assessment results documented herein and the improvements implemented during 2003 the Laboratory's overall assessment indicates "Outstanding" performance in the area of Cyber Security.

COUNTERINTELLIGENCE

System Indicators:

OBJECTIVE 1.0: A counterintelligence (CI) program shall be implemented that ensures compliance with applicable CI requirements.

MEASURE 1.1: Percentage of Laboratory reports to the Office of Counterintelligence, Chicago Office or the local FBI of any contacts or elicitation attempts with people of any nationality who seek sensitive unclassified information (e.g. proprietary or CRADA information) without proper authorization by any means. This includes any compromising situation or other inconsistencies associated with foreign travel or a visit or assignment.

EXPECTATION 1.1: The Laboratory shall meet this standard 100% of the time.

MEASURE 1.2: Percentage of employees that receive an annual Counterintelligence Briefing.

EXPECTATION 1.2: The Laboratory shall meet this standard 100% of the time.

YEAR-END RESULTS:

Expectation 1.1: In CY2003 there were no reports to the Ames Laboratory POC of any contacts or elicitation attempts with people of any nationality who seek sensitive unclassified information without proper authorization. We have instructed our staff as to their responsibility to report such contacts. We have established the proper lines of communication in case such an event occurred but have not needed to utilize them.

From time to time employees receive unsolicited requests for information dealing with on-going non-sensitive research. My recommendation to staff is to provide the location of published results to date without releasing any unpublished data. Further, several staff have reported foreign contacts to the Ames POC which are forwarded on to the Ames Counterintelligence Office in Chicago. These reports show that the training is taken seriously by Laboratory staff and they are aware of their responsibilities.

Expectation 1.2: Ames Laboratory, in conjunction with CH-CI has developed an annual CI training letter. This letter lays out all the requirements each employee must meet to cover their CI responsibilities. This training letter was mailed to all employees of the Laboratory in December 2003. This process allows the Laboratory to have 100% coverage for this training and meet this expectation.

OBJECTIVE 2.0: Compliance with Department of Energy (DOE) requirements and responsibilities governing official foreign travel by contractor employees.

MEASURE 2.1: Post-travel trip reports for all official foreign travel submitted within 30 days after return to duty station.

EXPECTATION 2.1:

<u>Performance Level</u>	<u>% of Reports Submitted in 30 days or less</u>
Outstanding	≥90%

Excellent	≥80%
Good	≥70%
Marginal	≥60%
Unsatisfactory	<60%

YEAR-END RESULTS: Unfortunately, the results here are not very good. The chart below shows the statistics for both 30 days and 45 days. The reason for the 45 days is that we found ourselves sending back reports that we felt were not adequate which meant that we, in many cases, missed the deadline. If you include the late reports that were in process at the 30-day mark we did a lot better.

	Submitted within <u>30 days</u>	Submitted within <u>45 days</u>
Trips processed in FTMS	82	82
Trips cancelled	<u>5</u>	<u>5</u>
Total Trips taken	77	77
Not complete at year-end	<u>4</u>	<u>4</u>
	73	73
Late reports	<u>34</u>	<u>19</u>
Reports submitted on time	39	54
Final percent	53%	74%

Based on the percentage above the overall rating for this objective is “Unsatisfactory”. If you include the reports that were submitted within the first 45 days, we move into the “Good” range. We have taken steps to improve this for next year. We have started contacting the traveler upon his/her return to Ames to remind them of the report. We also call periodically thereafter to assure a timely outcome. For example, for the last 10 trips that have been closed out in FTMS, eight travelers have submitted reports on time. We will try to maintain that average.

Even though our trip reports are not always timely this is the first year, probably ever, that we have had all of the trip reports entered and the trips closed out in the same year that they applied.

Compliance Items:

Ames Laboratory has worked with the Counterintelligence Officer to develop a program that is set up to be in compliance with the contract requirements and the various orders that are in place. These include DOE O5670.3, Counterintelligence Program; DOE P142.1, Unclassified Foreign Visits and Assignments; DOE N142.1, Unclassified Foreign Visits and Assignments; and DOE O551.1A, Official Foreign Travel. In addition, we are following the guidance received from Kyle McSlarrow in December 2002 in regards to reporting visits from foreign nationals. The two areas where we are weak in our compliance are the trip report process discussed above and the foreign travel requirement that foreign travel requests have to be submitted a certain number of days in advance of departure. We normally meet this requirement but occasionally we have an individual whose plans change that would like to attend a foreign conference so the paper work is late or we have an individual who needs machine time on equipment located in a foreign country who is notified of the availability of the machine too late to meet the advance submission requirement. We have been able to work with DOE to accommodate as many of these late foreign travel submissions as possible.

Self-Assessment

Opportunities For Improvement Identified in 2002

Last year's self-assessment identified the need to improve the trip report process by getting the travelers to submit their trip reports within 30 days of the completion of the trip. During the year we tried sending a letter from the COO to the scientific staff to explain the significance of the trip report and the requirement to submit the report within 30 days. This was followed with a reminder later in the year. Also a copy of the letter is attached to the approved travel papers to further remind the traveler of the need to submit this report in a timely manner. Since those efforts had limited success we have now started contacting the traveler upon their return from the foreign trip and reminding them of the need to submit the trip report. As the deadline approaches the OPOC will call the traveler to demand the report. This latter process has been more successful and of the ten trip reports submitted most recently eight have been on time. Unfortunately, trip reports will be something that we will have to track constantly since the traveler is concerned more with many other demands placed on their time and will tend to put off the trip report.

Significant Changes and Events

During the year a fair amount of change has occurred in our Counterintelligence Program. In December 2002 the Laboratory received new guidance on how to handle foreign visits and assignments. In January 2003 we submitted a plan on how our Foreign Visits and Assignments program would work in the future as a result of the new guidance. The guidance included milestones for handling terrorist country foreign nationals, sensitive country foreign nationals and non-sensitive country foreign nationals. These milestones were met but required some modifications in the way we do business. Extra resources were required to meet the milestones and continue the program. We have had to hire an additional .5 FTE in order to handle the extra duties. We have also had to matrix the help of Human Resources staff in order to review passport and visa data and verify the accuracy of the form AL473 data. The original person that we hired in March to help has since transferred to another job. Therefore, we are in the process of training a new hire, which puts additional strain on keeping up the paperwork. We currently are in the final stages of our semi-annual review of the sensitive country foreign nationals.

Another event dealing with Foreign Visits and Assignments deals with training. In June, Carol Cowan and Mark Murphy attended FACTS training held at FERMI Laboratory and presented by Regina Portscheller of the DOE Nonproliferation & National Security Institute. This training was very helpful for both of us since neither of us had ever attended FACTS training before.

Foreign travel has been under a cloud of uncertainty for most of the year due to a number of reasons. The war with Iraq, the SARS virus, the added difficulty of obtaining reentry visas for foreign staff, the transit strike in France, terrorist threats, etc. In addition, all contractor foreign travel is now subject to receiving a country clearance cable from the destination embassy. These factors plus the emphasis in the self-assessment on meeting the 30-day requirement for submitting trip reports has added a great deal of stress to the foreign travel program.

As of June 30, the Laboratory's primary contact at the FBI retired. Both of the agents that are currently assigned are relatively new to working with the Laboratory. However, both have proven to be helpful and willing to get involved in issues that impact the Laboratory whether or not they are directly involved. These new agents and I have set up a new process where they work through me for their initial contact with an employee. Our perception is that this process has been able to relieve any anxiety that may arise when someone receives a contact from the FBI. We have also set up a standing monthly meeting here at the Laboratory in order to handle issues in an orderly manner.

As of the writing of this report (January 2004) Dr. Barton has received his Q level access authorization. However, during 2003 he did not have one. This created some awkward situations this year as certain issues arose regarding foreign nationals. The new FV&A requirements raised a few concerns where the details could not be shared with Dr. Barton. The requested actions were taken, but the timing was somewhat different due to the need to coordinate the actions with the Contractor in order to make sure resources were available within ISU.

We are in frequent contact with the CI-Officer and the FBI. Now that Dr. Barton has his clearance Byron Eden, the CI-Officer, is setting up a meeting in Des Moines at the FBI Office to provide a threat briefing for Ames and to provide an opportunity for Laboratory personnel to meet some of the new FBI agents who will be dealing with Federal facilities. The Laboratory and CH continue to have a good working relationship with the local Office of the FBI. CH and the FBI work together on investigations as needed.

In addition to arranging meetings like the one mentioned above, Mr. Eden performs a number of duties to aid the Laboratory. He reviews all of our entries into the foreign travel, and foreign visits and assignments databases and performs indices checks on all of our foreign visitors. He also reviews our CRADA and WFO agreements for any CI concerns. He travels to Ames periodically to brief and debrief travelers and hosts and performs investigations when appropriate.

As mentioned above in Measure 1.2, the Laboratory conducts its annual counterintelligence briefing by distribution a training memo to all staff. This annual reminder of staff responsibilities often leads to questions, comments and notifications that are then forwarded to CH. Several notifications dealing with relationships or business dealings were forwarded to CH-CI.

During the year, two reviews took place that impacted the foreign travel or foreign visits and assignments. First, Yvonne Washington of the Chicago Operations Office came to Ames to conduct a baseline review of our foreign visits and assignments program. For the most part, the program reviewed well. A couple of the more significant findings included the need to update the desk procedures of the Ames OPOC and to complete the appropriate specific security plans for certain foreign visitors. The security plans are complete. The desk procedures are being worked on but are making slow progress due to the added requirements of the McSlarrow guidance.

The second review involved the Inspector General's Office who was looking at the Laboratory's Export Control program and its interaction with the foreign visits and assignments program. Unfortunately, little information was shared at the exit conference and the report has not been issued yet.

In addition to the above reviews, Dr. Barton and Mark Murphy were both interviewed separately for the IG inspection of the Counterintelligence Office in Chicago. The reviewers were interested in the interaction and support received from the CI Office. To our knowledge, the review found the relationship between the Laboratory and CH-CI to be a successful one and the program is functioning as intended.

Summary

Notable Practices

The Laboratory did a good job of responding to Deputy Secretary McSlarrow's guidance to create and implement a plan to fully report sensitive country foreign nationals. Ames has gone beyond the guidance by reporting all visits and assignments for sensitive and non-sensitive country foreign nationals. Also, the Laboratory received feedback from the Ames Area Office that the plan itself was very well received by DOE.

Opportunities for Improvement

In CY2004 Ames Laboratory will continue to work on its process to get trip reports submitted in a timely manner. This typically is not a high priority for the traveler, but since it is a requirement in the foreign travel order, we will push harder to achieve this requirement.

Self-Assessment Rating

The CI program at Ames continues to mature. Those of us at the Laboratory have an increased awareness of possible threats to our site. This is a result of the CI activities that occur here throughout the year. The efforts locally, along with those of Mr. Eden, are starting to take hold. In addition, the reviews that took place this year raised the awareness level of many scientists as to the importance of the CI program at Ames. The Laboratory and CH are working together to operate a program that works for Ames. We are grateful for the CH-CI leadership and support. The program is stronger this year than last and the hope is that it will continue to improve.

Even in the area of foreign travel, the trip report process has improved. All reports are in the FTMS system and the trips closed. This is an improvement over prior years. Now we need to improve on the timeliness of these reports. With exception of the trip report issues the CI program at Ames Laboratory would rate an "Outstanding" for CY2003. However, due to the difficulty we have in obtaining the reports from the traveler in a timely manner and getting them approved and posted within 30 days it is necessary to drop our rating to "Excellent."

HUMAN RESOURCES

System Indicators:

OBJECTIVE 1.1: Contractor will establish a systematic approach to its job evaluation system for exempt Professional and Scientific Classification system positions.

MEASURE 1.1: Percentage of Laboratory specific position descriptions which are analyzed to determine the appropriateness of the assigned classification.

EXPECTATION 1.1: Cumulative percentage of classifications reviewed and updated. (Baseline is to have every Laboratory specific description reviewed at least once every five years).

YEAR-END RESULTS: The following classifications in the professional and scientific system were reviewed during calendar year 2003:

- Systems Analyst Series
- Systems Support Specials series
- ESH Specialist
- Engineer series
- Manager, Industrial Hygiene
- Manager, Materials and Transportation

There were 25 incumbents in these classification titles. Of the 25 incumbents, 3 were recent hires. Eight (8) were in the formal review process of their position, or had recently had their position formally reviewed. Therefore, those 11 incumbents were functioning with known up-to-date job descriptions. For the remaining positions, the Position Information Questionnaire (PIQ) currently on file was sent to and reviewed by the incumbent and the supervisor. In each case they were requested to sign a document stating the PIQ was still accurate, that it was still accurate with minor changes made to the form, or to submit a new PIQ because the position had significantly changed. None were returned that indicated a significant change in the position. For the PIQ forms submitted with minor changes, the Human Resources Office reviewed each of these updated descriptions and determined that the changes were well within the parameters of the current classification and would not warrant a formal review for reclassification. All position descriptions in this year's scheduled classifications received individual review to ensure proper classification, and appropriate changes were made or action initiated for positions that had undergone significant alterations in duties and/or responsibilities. The process covered 100% of the targeted group and met precisely the intent of the established objective, thus the performance rating for this measure is "Outstanding".

OBJECTIVE 2.0 Contractor maintains a systematic approach to its employee performance management system for Professional and Scientific staff.

MEASURE 2.1: Percentage of annual performance appraisals completed against pre-established job related performance criteria for the Professional and Scientific staff.

EXPECTATION 2.1: 100% of individual annual performance appraisals will be completed annually.

YEAR-END RESULTS: The HR Office requested written performance appraisals for 101 professional and scientific staff who were on continuous appointment during the university's fiscal year, July 2002 through June 2003. These requests ask for a written evaluation to be completed by the supervisor and also ask for the signatures of the supervisor and employee indicating there was a discussion of the evaluation. There were a total of 90 (89%) written evaluations that were completed and are on file in the Human Resources Office. This return represents the same percentage return from a year ago meaning that we were unable to improve upon the process. The positive would be that we did not lose any individual manager's participation from previous years since the delinquent appraisals were all from one management area. This is not viewed as a critical item with regard to operations because communication between employees and supervision in this group is known to be regular and meaningful. Two employees from the group are actually in the process of review for promotion at this time, that being based on management's reaction to the increased contributions of the individuals. This in itself reflects on the regular exchange that is occurring in order for management to know the appropriate time to initiate promotion.

Once again it must be mentioned that there is not a direct correlation between performance and annual pay adjustments in the compensation system within which we function. For this very reason, there is little pressure that can be applied on individual managers to conform to the policies on written performance appraisals. This fact coupled with the minimal salary increase packages the past few years leaves little wonder why participation is on a less than enthusiastic basis. The nearly 90% participation actually speaks well for the management staff's professionalism in completing the written appraisals whether it be for compliance reasons or for appropriate guidance of employees, or perhaps both. In any event, considering the hurdles present at this point in time, maintaining 89% participation would warrant a rating of "Excellent" on this measure.

OBJECTIVE 3.0 Conduct a comprehensive review of the Compensation Program.

MEASURE 3.1: Examine and validate adequacy of existing internal controls and existing written procedures; and review per capita costs of the Laboratory's Compensation Program compared to those at the University.

EXPECTATION 3.1: Positive finding that HR procedures and controls are adequate and result in accurate employee/payroll records. Positive finding of acceptable cost alignment with University. (Strictly as pay, not benefits)

YEAR-END RESULTS: For purposes of this review, compensation will be considered as salary only, and the focus will be on controls for starting salaries of new hires, annual salary increases, and salary increases for position reclassification/promotion. The information and process explanations following should be prefaced with the statement that the compensation programs under which the Laboratory functions are highly structured, widely communicated, and administered with significant controls in place.

The non-exempt positions in the Laboratory are covered under labor contracts which are statewide contracts since the contractor, Iowa State University, is under a state government agency, the Iowa State Board of Regents. These contracts control starting salaries, anniversary merit increases, and annual matrix adjustments. Before any position is filled, there must be a written description of the job duties and responsibilities submitted to the University's central HR Office for classification approval into a pay plan of 15 grades. The subsequent appointment of an individual to the position is then reviewed by a classification analyst to ensure usage of the appropriate class title and starting salary. Anniversary increases are designated specifically by

labor contract and are administered centrally via an electronic process, therefore, control is foolproof. A specific process must be followed in order to reclassify/promote an individual to a higher grade level in the classification/compensation system. Briefly, the process involves an updated written job description, review by an analyst in the central HR Office, and concurrence from the Board of Regents Office. Again, the salary adjustment is dictated by policy, and the reclassification/salary action is checked for accuracy by the analyst before the payroll action is finally processed. There is complete coordination between the payroll function and the central HR functions so that no classification or salary action can be implemented without appropriate review and concurrence by administrative authority at the central level.

The processes for exempt positions are very similar except that there are no anniversary salary increases. Development of a position requires submission of a written job description to be classified and assigned to one of ten pay grades. Once the recruitment process is completed and an individual is to be appointed a starting salary is determined. The hiring department may offer a salary that falls within the first one-third of the assigned pay range without special approval. If a salary above the first third of the range is desired, a written justification must be submitted to and approved by the central HR Office and/or Provost Office prior to extending the formal offer. Market, internal equity, and/or exceptional qualifications are generally the reasons stated by the hiring department for exception to policy; and evidence of data to support the reason cited is necessary to receive a positive response. At the time the electronic payroll action is submitted by a hiring department for a salary above the normal hiring range, the payroll office will verify with either HR or the Provost Office that such action has received appropriate administrative approval.

The process of granting annual increases for exempt personnel occurs in a very structured manner with all such increases coming on the start of the university's fiscal year, July 1. The President/Provost communicate written guidelines for granting increases which always include a minimum increase for satisfactory performance and an overall average increase to strive for. There is generally a special process included to address any need for an exceptional increase for an individual in order to respond to a salary inequity, compete with an outside offer, or simply recognize superior performance. This special process involves written documentation of the reason for such request and how it will be funded. The requests are reviewed by the Provost Office and central HR ensuring the equity and credibility in the administration of the compensation plan are maintained. All increases that are granted are electronically reviewed for meeting the minimum and also for falling within the assigned salary range.

In summary, the processes in place for setting/changing salaries of employees within the University's payroll system, although electronically initiated at a departmental level, provide for thorough administrative review and approval. In addition, the process within the Ames Laboratory also eliminates the chance of a payroll action being implemented without appropriate approvals. All Laboratory payroll actions are initiated electronically by the Laboratory's HR Office to the university payroll system. In order for a change to be initiated HR must have the appropriate internal form completed with authorized signatures in hand. Required signatures ensure that 1) the program/department manager authorizes the request, 2) the action is within budget allocations and is an allowable cost, and 3) the action is consistent with personnel/payroll policies.

In addition to reviewing the controls in place for compensation activities, we attempted to look at a comparison between the Laboratory and the University of costs for administering the compensation programs. At the time this performance measure was developed, this comparison was thought to be something that could be determined with relative ease. However, in attempting to make comparisons of FTE efforts and/or the resultant salary costs, it was determined that there may well be too many variables to actually develop a reasonable comparison. For example, if we look at the two major employee groups that the HR staffs

administer in regard to classification and salary, merit system and P&S system, the results show the following. ISU HR has about 3.3 FTE's covering 4310 positions campus wide while Ames Laboratory HR has .35 FTE's covering 267 such positions. This leads to a comparison rate of ISU with 1306 positions covered per FTE and the Lab 763 positions per FTE; thus giving the appearance that the Laboratory is staffed nearly twice as heavy in the compensation area. If we look at salary costs considering the 3.3 and .35 FTE figures the comparison becomes even more disproportionate; ISU with a cost of \$35.67 per position and the Laboratory \$95.64 per position for administering the compensation programs. As mentioned, there are a number of variables that play into this apparent imbalance in staffing. ISU HR is the final step for review of classification requests for the entire campus, however, with some major units on campus, like the Ames Laboratory the review may be one of a cursory nature knowing that the unit has essentially conducted a review and endorses the requested change. This scenario would have a significant impact since in addition to the Ames Laboratory numbers in the P&S system the University Extension Service has 400+ positions that fall under this type of process and a couple hundred information technology positions on campus are reviewed by an ad hoc committee. In the merit system (nonexempt), you have over 200 custodians, nearly 200 food service positions, and numerous other classifications with large numbers of incumbents. Time consumption and complexity in administration of compensation systems for these populated classifications is significantly minimized by the homogeneity of factors to consider in taking action. Therefore, comparison of sheer numbers, 4310 to 267 in this case, may lead to conclusions with no realistic basis. We were unable to determine any other method that might provide a valid comparison of delivery costs for compensation programs at the Laboratory and University levels. Consequently, we suggest further dialogue to determine if there is a need for, and possibility of, developing a valid cost comparison for administering one function within the HR operation. The unusual relationship with the Contractor with regard to personnel policies and procedures may make such an undertaking an exercise in futility. A more global comparison of the HR function may be an option to consider.

This measure addresses two issues with compensation administration, controls and cost of delivery. On the controls aspect of the measure, a rating of "Outstanding" is warranted to recognize the tight structure of the system including communication of processes and controls for ensuring compliance, fairness, and equity in compensation practices. The cost issue was not addressed with any finality; not because of delinquency on the respondent's part, but because of the inability to generate hard data for valid comparisons. Nevertheless, lack of finality needs to be reflected in the overall rating thus this measure should be rated as "Excellent".

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE orders.

Self-Assessment

Background

Scope and Organizational Overview

The Human Resources Office of the Ames Laboratory is an office focused on providing support services to management relative to the workforce. The primary mission of the office is to administer in an effective manner the programs that the contractor has in place to recruit and retain a proficient workforce. Secondly, the office creates and maintains the records to ensure the integrity of operations and compliance with applicable regulations with regard to personnel and payroll activities.

The major elements of the personnel management area are; salary administration, position classification, employee and labor relations, visa administration, and recruitment/employment. The contractor has varying policies and procedures for different employee groups making it imperative for the HR staff to have a thorough knowledge of policies and to discharge duties with a high degree of completeness and accuracy. The current staff includes four employees representing 3.55 FTE's with 1.75 being professional staff (manager and assistant manager) and the remainder made up of two clerical positions. Although there is generally opportunity for the HR Office to provide input into the contractor's systems, it is clear that the thrust of the office is more in the process area with very little influence in altering systems for the betterment of the Laboratory's workforce governance.

Process Management

Key Activities and Services

The Human Resources Office provides process mechanisms and guidance for application of same, for supervisors and management to recruit, compensate, supervise, and retain the employment force necessary to carry out the work necessary to attain the organizational goals. The majority of interactions occur with employee supervisors and group leaders with regard to employment, compensation, and employee/labor relations issues. A significant amount of work efforts are directed at assuring that actions are in compliance with legal and procedural requirements governing the employment and compensation of the workforce. Such requirements may be initiated and controlled by federal or state government or they may be from the local contractor.

Process Management Assessment Criteria

Because of the Laboratory's contractual agreement to adopt the University's personnel policies and procedures, there are external offices that monitor actions with regards to compliance with applicable regulations and requirements. With this administrative oversight, there is little systems control that resides with this office, however, process controls are generally within the scope of responsibility of the office.

General Contractor Administration

As mentioned earlier, the Ames Laboratory has adopted the personnel policies and procedures of the Contractor, Iowa State University in their entirety. Because of the location of the Laboratory and the sharing of positions with university academic units, this arrangement is very cost effective for the Laboratory. The staff needed to administer payroll/personnel functions is considerably less than would be required should the current arrangement not be in place. The advantage of participating in much larger group insurance plans by being coupled with the University also provides an element of cost efficiency that would be difficult to attain were the Laboratory to function independently.

The systems in place to govern the single most costly element of operations, manpower, are sound, well-founded, and for the most part, administered in an effective manner. Checks and balances built into the systems are sufficient to ensure consistent application of policies and procedures and approval lines are structured to guard against noncompliance with applicable statutes. Continual efforts are made to keep management personnel informed of their responsibilities, and training programs are regularly provided to enhance the effectiveness of managers and administrators.

Complete cooperation has always been provided in the resolving of problems, and a conscious effort to review/make changes to systems is ever present. Relations between the University HR staff and the Laboratory HR staff are very professional and always focused on quick and reasonable solutions to problems that surface.

Summary

Areas of Excellence

Application of policies and procedures in a customized manner, i.e. analyzing individual cases to determine the most appropriate course of action to attain the desired result, continues to be a characteristic of the office's operation. A very experienced staff with strong interpersonal relations skills affords the opportunity to function in this manner. Considerable effort is made by the staff to build strong working relationships with approving authorities in the University community since they maintain administrative control over most HR activities. The current climate reflects a great deal of mutual professional respect and confidence with regard to disposition of regular and recurring human resources activities and issues.

Opportunities for Improvement

The development of a plan to address the question of cost comparisons for delivery of HR programs could be looked at for future purposes. There will continue to be attempts to increase participation in the performance appraisal process to the 100% level.

Self-Assessment Rating

Overall it was a successful year in the HR functions. Our job classification review was once again flawless and we maintained our level of participation in the performance appraisal process. We feel strongly about the appropriateness of the policies and procedures used in the administration of our compensation programs and the controls in place to ensure the integrity of the systems. We also feel that the HR programs are delivered in a very cost efficient manner, however, we were not able to back that feeling with any local data comparison. The diversity numbers were on the positive scale once again. A rating of "Excellent" to "Outstanding" is appropriate for the Human Resources with the only flaw coming with the cost comparison issue.

PERSONAL PROPERTY

System Indicators:

None.

Compliance Items:

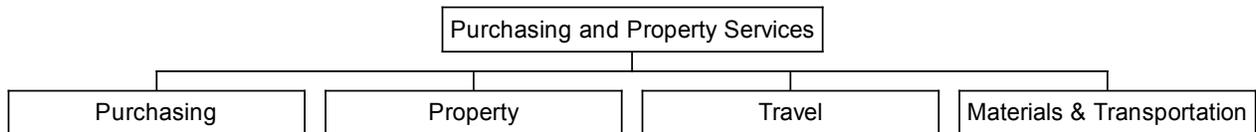
Consistency with DOE prime contract requirements and all applicable DOE orders.

Self-Assessment

Background

Scope and Organizational Overview

The Property Services Office, for the purposes of this report, includes all aspects of asset management, storeroom operations, warehouse receipt and delivery functions, and transportation management. The mission of this office is to provide reliable, cost effective service to the user community at Ames Laboratory and operate the office in accordance with appropriate government regulations and directives. The internal management structure of this office is as outlined on the following organization chart:



Recent Concerns and Related Actions

There have been no significant concerns raised either internally or externally to the Laboratory.

Process Management

Key Activities and Services

The Property Services Office provides for control of all accountable assets as follows:

- Capital equipment
- Accountable non-sensitive equipment
- Sensitive equipment
- Precious metals
- Storeroom supplies
- Fleet vehicles

The office also provides for receipt and delivery of all equipment and consumables that are required by Laboratory personnel. The office's customers are all Laboratory personnel from an internal prospective, DOE (CH), and Iowa State University from the external. The principal regulations that guide the operation of the office are as follows:

- Federal Property Management Regulations
- DOE Property Management Regulations
- Prime Contract Articles

Process Management Assessment Criteria

Ames Laboratory and DOE (CH) agreed to use the Balanced Scorecard (BSC) Performance Measurement and Management Model as issued by Richard H. Hopf dated December 18, 1997 (as updated), to assess the Laboratory's performance in Property Management.

Business Results

Balanced Scorecard Results

Balanced Scorecard Report was submitted to DOE(CH) under separate cover.

Business Results Assessment Criteria

The Balanced Scorecard results indicate that the Property Services Office is highly efficient and customer oriented.

Summary

Areas of Excellence

The Property Services function has been continually refined to the point where it is very effective and cost efficient. The Laboratory continues to look for opportunities to increase efficiency by fine tuning what core services are required by the user groups and to provide those services within budget limitations. The Laboratory's Personal Property System was recertified through April 2006 by DOE(CH).

Opportunities for Improvement

Meeting the Local Use Objectives for the vehicle fleet.

Self-Assessment Rating

The overall rating is "Excellent" due to the individual ratings of each performance measure and BSC objective.

COMMUNICATIONS AND TRUST

System Indicators:

Objective 1.0: Development and implementation of an effective communications and community involvement plan.

Measure 1.1: Achievement of significant goals and/or milestones as identified in the DOE-approved communications and community involvement plan for the performance period.

Expectation 1.1: A set of activity items will be considered the “Plan” for measuring Communications and Trust accomplishments and for determining Ames Laboratory’s overall rating in Communications and Trust. The accomplishment of the number of activities listed here will result in the adjectival rating.

<u>Activities Accomplished</u>	<u>Rating</u>
6-7	Outstanding
5	Excellent
4	Good
<3	Marginal

Following are expectations and descriptions of each task.

1. Conduct a self-assessment of office performance to determine effectiveness toward reaching office goals.
 - Public Affairs will hold a self-assessment session in the June 2003 time frame. This session will include a discussion of achievements and best practices as well as a discussion of goals for 2004.

Self-assessment to include the following:

- Review of information received from DOE-CH about 2002 performance measures
 - Status report on 2003 measures
 - Discussion of efforts to meet remaining unmet 2003 measures
 - Evaluation of mission statement
 - Evaluation of “Top 10” office priorities
 - Discussion of blueprint for public affairs activities for 2004 performance measures
 - Input from DOE-CH contact on DOE and CH goals
2. Media placements from news releases and other media interactions. Public Affairs has developed a point system for determining an Outstanding rating in this area. The point system is as follows:

1 point = local media placement

2 points = regional/trade journal placement
3 points = national placement

Rating:

150 points = Outstanding
125 points = Excellent
100 points = Good
<100 points = Satisfactory

3. Attend two outreach events, one local and one national. Opportunities exist for promoting research and technology accomplishments both on a regional and national basis. Through interactions with its contractor, Public Affairs will promote the Laboratory through poster presentations at two outreach events.
4. Three introductions to the Laboratory via local/state/national interactions. These interactions would include either visits to the Laboratory or visits to external functions. Potential interactions could include those with Ames officials, Iowa legislators, members of Congress, and high-ranking DOE and other government officials.
5. Three introductions to the Laboratory via industry interactions. These interactions would consist of either visits to the Laboratory or presentations/interactions at external meetings or other functions. These interactions will exist outside annual VEISHEA and Iowa State Fair interactions.
6. Develop an integrated marketing plan for one Ames Laboratory cutting-edge research for technology accomplishment. Attempt to identify a second technology and begin the planning process. Suggested items to be covered under plan include:

External:

- a. Developing a list of publications to which to cater interactions
- b. Place an article in a key publication
- c. Develop a news release on research or technology
- d. Hold a media event

Internal:

- a. Hold an Ames Laboratory Lunchtime Information Exchange (ALLIE) featuring this research
- b. Write Insider and Inquiry articles on next accomplishment
Potential items of interest include but are not limited to:
 - Magnetic Refrigeration
 - Midwest Forensics Resource Center
 - Biorenewables Resources Consortium

7. Promote esprit de corps among employees by sponsoring two events. Potential actions from which to pick include:
 - a. Develop tours/presentations for employees
 - b. Possible Ames Laboratory Open House for community
 - c. Ames Laboratory event for Chamber of Commerce
 - d. Identify a worthy cause to which all employees can contribute

YEAR-END RESULTS:

1. Public Affairs held its annual self-assessment on September 23, 2003. Brian Quirke, DOE-Ch attended. All of the above-mentioned items were evaluated during the self-assessment.

Follow-up session was held December 16, 2003. A review of the updated office mission and priorities was held. A status report on 2003 measures was given. Office goals for the remainder of 2003 and for 2004 were discussed and developed.

2. Since 1/1/03, Public Affairs has issued 10 news releases. Ames Laboratory has received 103 placements in local, regional, national and international media. Based on the point-total scale agreed upon by DOE-CH, Public Affairs has achieved 169 points on the 150-point scale. A breakdown of placements is as follows: local – 49; regional/trade/scientific – 42; and national/international – 12.
3. Ames Laboratory has attended five outreach events, three local and two national. They are as follows:
 - a. 1/13/03 – American Association for Advancement of Science (AAAS) annual meeting in Denver, CO. Ames Laboratory display was part of the Office of Science display that featured all of the OS laboratories. Ames Laboratory's director attended this event.
 - b. 1/17/03 – Iowa Governor's Inaugural display. Ames Laboratory was featured in a display designed to showcase opportunities to conduct research with Iowa State University, Ames Laboratory's contractor. The display was visited by Governor Tom Vilsack as part of his inaugural activities and was staffed by Public Affairs personnel.
 - c. 1/23/03 – Iowa State University Legislative Breakfast – Ames Laboratory director, Tom Barton, a senior metallurgist and the Public Affairs manager participated in an exhibit at the State Capitol to highlight opportunities to work with Iowa State University, Ames Laboratory's contractor. More than 70 legislators attended this event.
 - d. 5/21/03 – Iowa Manufacturers Expo. - Ames Laboratory's Iowa Companies Assistance Program was featured in a display at the Expo., which was held in Davenport, Iowa. Tom Lograsso, director of ICAP, worked the display during the Expo.
 - e. 11/15-21/03 – Members of the Ames Laboratory Scalable Computing Lab participated in a booth at the SC2003 Conference in Phoenix, Ariz. A premier event for professionals in the field of parallel high-performance computing, the event provides opportunities to display accomplishments and share information and ideas with other high-performance computing professionals from government, industry and academia.
4. As of mid-year, Ames Laboratory management has given eight introductions to the Laboratory via local/state/national interactions.
 - a. 4/13/03 – Tom Barton and program directors Ed Yeung and David Baldwin provided an overview of the Laboratory and information on cutting-edge research to Kurt Kovarik, aide to Senator Charles Grassley. Presentations were made on the proposed Metabolomics facility and the Midwest Forensic Resource Laboratory.
 - b. 5/2/03 – Tom Barton visited with a representative of the Ames Economic Development Commission. Businessman Russ Cross met with Dr. Barton to fill out an AEDC survey and receive an introduction and overview of the Ames Laboratory.
 - c. 5/11/03 -- Ames Laboratory associate Valerie Sheares hosted a delegation from the country of Columbia in May. The delegation visit was part of a program sponsored by the Ames Rotary International. The delegates discussed polymers and plastics, areas in which Sheares has expertise.
 - d. 8/18/03 – U.S. Representative Tom Latham was a guest at the Midwest Forensics Resource Center workshop entitled, "Innovations in Infrastructure for Crime Laboratories." Congressman Latham spoke to members of the MFRC, which consists of crime laboratory directors from numerous Midwestern states. The Ames Laboratory director attended this workshop.
 - e. 9/11/03 – Iowa State University President Gregory Geoffroy and Provost Ben Allen visited Ames Laboratory and met with the director, deputy director, and division and program directors; toured laboratories and facilities; and met with employees. This was the first visit to the Laboratory by ISU's new Provost.

- f. 10/15/03 – Ames Laboratory’s director was the guest speaker at the Quad City Engineering and Science Council President’s Meeting. This organization consists of 33 engineering and science associations and includes technical professionals and decision makers in numerous major Iowa companies. The director provided an overview of the Lab and its other IPRT centers’ outreach efforts.
 - g. 11/03 – The deputy director, Bruce Harmon, hosted visitors from the Quantum Photonic Science Research Center at Hanyang University in Seoul, Korea. The visiting scientists have entered into a partnership with the Condensed Matter Physics Program to facilitate the sharing of information on photonics and photonic bandgap crystals, with the goal of advancing the development of new concepts and new photonic devices.
 - h. 11/14/03 – Ames Laboratory hosted Raymond Orbach, director of the Office of Science for an On-site Review. Other DOE representatives on-site included Toni Joseph, Jim Decker, Jeffrey Salmon and Roxanne Purucker. Through a videoconferencing link, other DOE officials, such as Pat Dehmer and Walt Stevens also participated in the on-site. The on-site focused on the Laboratory’s vision, planning and research.
5. Ames Laboratory has given five introductions to the Laboratory via industry interactions. Various other informal industry interactions have occurred between our scientists and the Office of Industrial Outreach.
- a. 4/11/02 – Tom Barton gave a presentation to members of the Industrial Advisory Board for the Institute for Physical Research and Technology at Iowa State University. Members of the board represent Fortune 500 and other multinational companies in the United States. Examples of companies in attendance included ALCOA, Boeing, General Motors, Delta Air Lines and the Gillette Company.
 - b. 5/6/03 – Tom Barton was a presenter at the Federal Laboratory Consortium National Meeting. Dr. Barton, who was elected FLC Director of the Year, sat on a panel that participated in an interactive forum entitled, “Directing the Future.”
 - c. 5/21/03 – Iowa Manufacturers Expo 2003 – senior metallurgist, Tom Lograsso, participated in an exhibit for the Iowa Manufacturers Expo, held in Davenport, Iowa. The exhibit featured ways in which Iowa companies can work with Ames Laboratory researchers to solve their technical problems.
 - d. 7/9/03 – The director was the guest speaker at the Ames Economic Development Commission’s Quarterly Luncheon Meeting. His presentation focused on the economic impact of the Ames Laboratory on Iowa’s economy. Approximately 50 members of the AEDC’s board of directors and other Ames Chamber of Commerce members attended the meeting. The director’s remarks focused on the Laboratory’s economic impact on the Ames community.
 - e. 10/24/03 – Four program directors gave presentations on their research areas to representatives from 13 Fortune 500 and other companies during the IPRT Industrial Advisory Board meeting. Tours of research areas were also provided. Companies represented were: ALCOA, Inc.; General Mills; Deere & Company; General Motors Co., Dow Corning Corp.; Ernst & Young; Micron Technology, Inc.; Rockwell Scientific; Delta Air Lines, Inc.; The Boeing Co.; The Gillette Co.; The Goodyear Tire & Rubber Co.; and United Technologies/Pratt & Whitney. All tour members had science, technology and business backgrounds.
6. Ames Laboratory developed an integrated marketing plan for one cutting-edge technology. This technology is the high-temperature furnace in the Laboratory’s Materials Preparation Center. Following is a list of activities suggested as part of the marketing plan and the results of these activities.
- a. External:
 - i. Develop a list of publications to which to cater interactions – a list of more than 25 journals, newspapers and Web-based outlets was developed.

- ii. Place an article in a key publication – of the key publications identified, the Washington Post carried an article entitled, “Scientists Say Furnace Melts Any Metal.”
 - iii. Develop a news release on research and technology – to date, there have been 16 media placements based on news release. These placements have appeared in both print, broadcast and Web-based media, including the Washington Post, Newsday, ABC News and the Des Moines Register.
 - iv. Hold a media event – although a media event was tabled due to security issues, the Laboratory hosted a tour of the high-temperature furnace for a group of students from the Iowa State University Aerospace Engineering Honor Society. A photographer from the *Ames Tribune* was invited to attend.
- b. Internal:
- i. Hold an Ames Laboratory Lunchtime Information Exchange (ALLIE) featuring this research – it was determined that due to cost and space issues, a tour for employees of the furnace would not be feasible.
 - ii. Write Insider and Inquiry articles on next accomplishment – an article on the high-temperature furnace appeared in *Insider*, the Laboratory’s monthly newsletter. An update article appeared in the “InTouch” section of the 2003 issue of *Inquiry* magazine.

A second item of interest, the Midwest Forensics Resource Center, was discussed, however this idea fell through due to the lack of availability of the honored guest, which limited any type of focus for the event.

7. Promote esprit de corps among employees by sponsoring two events.
- a. Ames Laboratory Science Bowl – more than 90 individuals, from scientists to staff to students volunteer each year for this noteworthy science and math competition. In 2004, they will be called upon to volunteer for an additional science bowl event, the Middle School Science Bowl. This event will require 30+ volunteers.
 - b. The Laboratory’s second noteworthy cause was the organization of both walking and running teams to raise money for the American Cancer Society’s Story County Relay for Life event held at Iowa State University. Several thousand dollars were raised and contributed to the event.
 - c. The second annual Ames Laboratory Holiday Auction was a huge success. Employees donated items for both the “silent” and “live” auctions, helping to raise \$1,425 for the Beloit Residential Treatment Program in Ames. In addition to the auction, held on December 11, 2003, Laboratory employees also supplied food items and hats and mittens for needy individuals. These items were donated to the Mid-Iowa Community Action Agency.

YEAR-END RATING: Based on the above discussion of each of the seven performance measures, Public Affairs has met all of its performance measures and qualifies for an “Outstanding” rating.

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE orders.

Critical Items:

None

Significant Changes:

Security concerns have impacted Public Affairs' ability to organize events, such as community open houses.

Self-Assessment

Background

Scope and Organizational Overview

Ames Laboratory's Office of Public Affairs has a diverse mission:

- To respond to the information needs of the Laboratory Director and other key stakeholders, including the DOE and ISU.
- To communicate awareness of Ames Laboratory research accomplishments and capabilities to key stakeholders, such as media, the DOE, ISU and the general public.
- To keep the public informed on activities related to the Laboratory's hazardous waste site issues through appropriate public communication coordination mechanisms.
- To conduct outreach activities, such as tours, talks and presentations, and to create displays.
- To coordinate Ames Laboratory's Regional DOE Science Bowl competitions.

The Office of Public Affairs pursues its mission with a genuine commitment to openness and honesty in all stakeholder interactions.

Recent Concerns and Related Actions

None.

Process Management

Key Activities and Services

The Public Affairs Office uses a variety of strategies to fulfill its mission and goals. These strategies fall into four broad areas: communication, public participation coordination, outreach and education.

Communication

- Media relations – communication with editors and writers of national, regional and local publications to promote Ames Laboratory scientific accomplishments to key audiences.
- News releases – sent to key audiences of national, regional and local significance to promote the Laboratory's numerous scientific, technological and individual achievements.
- *Inquiry* – annual magazine highlighting Laboratory research and technology and other significant activities.
- *Insider* – a monthly newsletter designed to showcase Ames Laboratory personnel and activities, and to distribute pertinent Laboratory information and announcements in a timely fashion.
- *DOE Pulse* – a monthly on-line newsletter prepared by public affairs professionals at DOE's Office of Science labs.
- *DOE This Month* – a nationally distributed publication focusing on significant highlights throughout the DOE complex.
- *Inside Iowa State* – a biweekly faculty and staff newsletter published by Ames Laboratory's contractor, Iowa State University (ISU). Newsletter publishes stories submitted by Ames Laboratory Public Affairs writers.
- Science News Tips – regular contributions to a monthly ISU science tip sheet for media.

- World Wide Web page – includes general information about the Laboratory, opportunities for research with Ames Laboratory scientists, and links to Ames Laboratory research programs and technical facilities.
- Today's News – a daily rundown of news happenings at ISU, Ames Laboratory's contractor. Ames Laboratory Public Affairs' news releases are routinely highlighted on this web page.
- Brochures and fact sheets – these items are updated when necessary to reflect new research accomplishments and other activities.
- Quarterly Science Report – a bound booklet that includes science stories that have appeared in *Insider*. Booklet is distributed to key national science writers.

Primary customers are media; DOE officials; local, state and federal leaders; industry leaders; and the general public.

Public Participation Coordination

Public Affairs supports the Laboratory's mission of keeping the public informed on important issues through several mechanisms:

- Public Information Sessions
- Community Advisory Group interactions
- Ames Laboratory Information Repository

Meetings with the Lab's Community Advisory Group are held on an as-needed basis and are guided by the release of new information related to Laboratory issues.

Primary customers include DOE and Ames Laboratory officials, regulators, local, state and national leaders, the Laboratory's Community Advisory Group; and the general public.

Outreach

The Laboratory opens its doors for tours of its facilities and laboratories each year. Groups are made up of dignitaries, industry leaders, students and the general public. In addition to tours, various staff members make presentations outside the Laboratory, which are supported by Public Affairs. Examples of these types of events include presentations by the Laboratory director, exhibits and displays.

Public Affairs produces a variety of informational posters for displays that are featured at technology transfer shows and other information-sharing events. The office works with the Laboratory's Office of Industrial Outreach as well as DOE and ISU organizations to produce these exhibits. In addition, Public Affairs coordinates a variety of rotating and permanent displays that welcome visitors to the Ames Laboratory.

Education

The Ames Laboratory/Iowa State University high school Science Bowl is an annual science/math competition for students from Iowa high schools. Public Affairs coordinates this regional event, which hosts 48 teams. Ames Laboratory scientists and staff serve as moderators, judges, scorekeepers and timekeepers for the competition.

In 2004, the Laboratory will host the inaugural Middle School Science Bowl. Much like the high school event, the middle school bowl includes a math/science competition. In addition, students will work with ISU students and Ames Laboratory scientists to build hydrogen fuel-cell cars.

Other educational activities include interactive science exhibits for Science Night activities at Ames schools, for the Ames Public Library's Summer Program, and for the ISU Women in Science and Engineering program.

Website

Ames Laboratory's web page has been set up to serve stakeholders. Visitors to the Laboratory's main web page can easily contact Public Affairs for more information on topics of their choice by accessing the Feedback icon at the bottom of the main web page. Once accessed, users are encouraged to ask questions, make comments or suggestions, or report any problems with the services provided by the Laboratory. Users can also leave their name, e-mail address, subject of their e-mail, and a message. These messages are answered in an appropriate fashion by a designated Public Affairs' staff member. Messages are usually diverse in scope, ranging from students inquiring about potential internships to general audiences seeking basic Laboratory information to researchers requesting information about specific Ames Laboratory research projects. Those contacts that include requests for information on specific research projects are routed to appropriate Laboratory researchers. In general, information requests are minimal, about five per month. The vast majority of these requests are of a general nature.

Assessment Criteria

Public Affairs met or exceeded all seven of its 2003 performance measures. One of these measures included a self-assessment of the Public Affairs Office. Staff met to discuss items such as the development of a mission statement, a list of "Top 10" priorities for staff and performance measures for 2004. A follow-up meeting was held to go over items discussed during the first meeting. A member of the Chicago Communications Office participated in this exercise.

Public Affairs' efforts to increase interactions with internal and external stakeholders continue to grow. Examples of initiatives in these areas are as follows:

- Public Affairs is a member of the LCC (Laboratory Communicators Council), which consists of public affairs managers from the various DOE national laboratories.
- Public Affairs is a member of the Iowa State University, University Relations Council, which consists of public affairs professionals from colleges and departments throughout Iowa State University.
- Public Affairs is a member of the Ames Public Affairs Council, which consists of public affairs professionals in Ames.
- Public Affairs manager is a member of the Des Moines chapter of the Public Relations Society of America and the Council for the Advancement and Support of Education.
- Public Affairs contributes to numerous contractor-sponsored publications and web-based communications devices, including the ISU Science News tip sheet, the Inside Iowa State newsletter, Visions magazine, and the DOE Pulse.

Business Results

Areas of Excellence

The overall rating is "Outstanding" and is expected to remain "Outstanding" over the next reporting period. Objectives, measures and expectations for the Communications and Trust program are a valid, accurate and meaningful reflection of performance for this reporting period for the following reasons:

Proactive communication is the hallmark of the Ames Laboratory Public Affairs Office. The various communication strategies promoted in this area during the latest performance period have once again been well received by key audiences.

A key strength of the functional area remains our talented group of communications specialists and support staff whose work continues to positively impact the specific mission of the Public Affairs Office and the Laboratory, in general. Staff duties are diverse, ranging from science writing to display design, education-events coordination and industrial outreach. A “teamwork” approach to accomplishing our communications activities is very much the norm in the Public Affairs Office.

Major achievements of the Public Affairs Office in 2003:

- Increased effort on media relations, resulting in additional media placements in web-based publications.
- Coordinated another successful high school Science Bowl.
- Selection by DOE to be a host site for a regional Middle School Science Bowl in 2004.
- Began discussions with ISU Foundation for a permanent fundraiser for both of the Ames Laboratory Science Bowls. Decision is expected in 2004.
- Will host an Ames Chamber of Commerce Business After Hours event in 2004.
- Developed a wildly successful holiday auction that raised over \$1,400 for a worthy cause.

Summary

Opportunities for Improvement

Public Affairs has recognized the need to update the Laboratory’s main web page. In 2003, a committee was formed to provide input into the new page. All input has been evaluated and used to help develop the page, which will be unveiled in 2004.

Self-Assessment Rating

Based on the assessment above, a rating of “Outstanding” was achieved in CY2003.

FACILITIES MANAGEMENT

System Indicators:

OBJECTIVE 1.1: Fully populate the Facility Information Management System Maintenance (FIMS) and associated fields with accurate information for all real property assets at Ames.

MEASURE 1.1: Complete and accurate information is entered in the six maintenance and associated fields. The fields that will be measured are: Deferred Maintenance; Annual Required Maintenance; Annual Actual Maintenance; Inspection Date (Maintenance); Replacement Plant Value; and Deficiency Systems (if applicable).

EXPECTATION 1.1: The Laboratory will populate and validate 100 percent of the fields identified above for all the real property assets (buildings and other structures) listed in FIMS.

Description of Method:

$$\frac{\text{Total number validated fields}}{\text{Total number of required fields}} \times 100 = \% \text{ Validated}$$

<u>Performance Level</u>	<u>Metrics</u>
Outstanding	100%
Excellent	95 - 99%
Good	90 – 94%
Marginal	85 – 89%
Unsatisfactory	< 85%

Notes and Assumptions:

Total number of required fields equals the number of real property assets (buildings and other structures) at the site times the number of data fields identified above.

Total number of validated fields equals the number of maintenance and associated fields identified above that have been populated **and** validated for accuracy.

YEAR-END RESULTS:

As reported in the Mid-year report, utilizing FIMS reports 105, 112 and 132, all six fields listed above in Measure 1.1 were validated for all Laboratory buildings and structures on 6/26/03. Results of the validation are:

$$\frac{72}{72} = 100\% , \text{ which is "Outstanding".}$$

Compliance Items:

Consistency with DOE prime contract requirements and all applicable DOE orders.

Critical Items:

None

Significant Changes:

FIMS will be going web-based in the Spring, 2004.

Self-Assessment

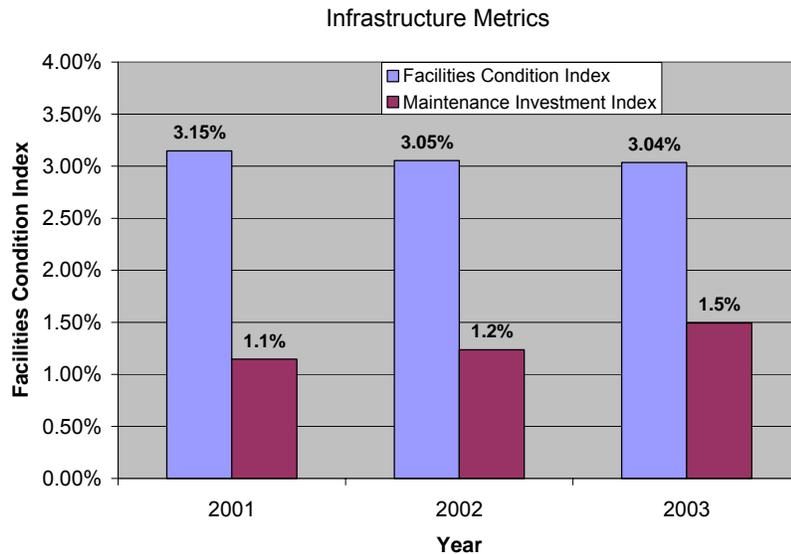
Process Management*Key Activities and Services*FacilitiesMaintenance Data

Ames Laboratory has made significant progress and improvement in the capture, management and reporting of data needed for DOE's corporate assessment of infrastructure. The values for actual maintenance, deferred maintenance and replacement plant value (RPV) are used to calculate performance indices of Facilities Condition Index (FCI) and Maintenance Investment Index (MII). A new job order was defined and existing job orders have been redefined to provide a clear separation between maintenance and non-maintenance activities done with indirect funds. A thorough evaluation of activities in the Facilities Services Group and in other areas identified additional maintenance efforts that are included in the actual maintenance reporting. These numbers are reported in the Integrated Facilities and Infrastructure Budget Crosscut and they are a component of the actual maintenance reported in FIMS. This is a critical effort because the actual maintenance value is used as the numerator of the MII.

The denominator of both the Facilities Condition Index and the Maintenance Investment Index is the Replacement Plant Value. In 2003, the method of calculating the RPV was updated to use a Current Plant Value (CPV) methodology. The previous method used a web-based estimating model to develop a contractor-derived value for input into FIMS and in the performance indices. The method was changed to this so that RPV would be based on a well-accepted methodology that is consistent with what many other sites are using. Refer to Appendix 1, Contractor Derived Replacement Plant Value, for a more detailed description. The values generated by the new method were input to FIMS and they provided the basis for the 2003 "snapshot" of FIMS data for the year.

The two primary indices for measuring infrastructure maintenance are the MII and the FCI. Even though the FCI was not included as a 2003 performance measure, it is still useful as part of the Self-Assessment process. The revised method for calculating the RPV has changed the basis, i.e. the denominator, for both the MII and RPV. Therefore any trends in the FCI must use the new method to revise the previous values to a consistent basis. The following chart shows the FCI and the MII for 2001-2003. The FCI shows a slight downward trend at an overall level of approximately 3%. The 3% FCI translates to an adjectival rating of "excellent" under the prior performance metrics. Under the rating system for 2004 it would also rank as "excellent". This provides indication that the facility is being well maintained. The Office of Science target for MII for FY2004 is 1.4%. The Ames Laboratory has shown an increase in the MII since 2000 with a 1.5% value in 2003. The increase is a result of more resources being dedicated to maintenance activities and better systems to capture all of the maintenance expenditures. Exceeding the 2004 target value in 2003 is a noteworthy accomplishment. It is expected that the target value

will be met in 2004. The target values for the performance measure for 2005 will be developed during 2004.



Continuous Improvement

The Laboratory continues to pursue improvements in the infrastructure, maintenance and service as a normal course of business. The continuous improvement metric included as a performance measure in previous years resulted in an adjectival rating of “outstanding”. The same service and improvement ethic that would rate “outstanding” exists even in the absence of a specific metric.

The facilities craftsmen routinely share, with management, that having the proper tools and information for the job can make “all the difference in the world” with regard to the ease or difficulty of a particular task. The policy within Facilities Services has always been to ensure the shops have the proper resources to effectively and efficiently do their jobs. Craftsmen are encouraged to evaluate their current work tasks in light of the available tools on the market to ensure that workers are equipped with tools and equipment that boost productivity, capability and safety. Over the past year tools and equipment have been purchased or rented that accomplish this. For example, a button punch snap lock machine was purchased to boost productivity in fabricating sheet metal ductwork. It eliminates one complete step in assembling rectangular ductwork, which saves a significant amount of labor. The machine also has the capability to fabricate “S” and drive cleats saving additional fabrication time. For a specific project, a small backhoe that would fit through existing doorways was rented to excavate underfloor drain lines. It boosted productivity and virtually eliminated hand digging with the related potential for back injury. Other tools have been purchased to improve productivity and safety such as gas leak detectors, additional battery powered tooling, and additional selections of core drills for removing contaminated floor drains.

Plant engineers and craftsmen work together closely to deal with a broad range of facility issues. For example, differential pressures between buildings or between buildings and outside prevented some doors from closing and latching. This created problems with respect to security, energy conservation, and door operation relative to handicapped access. Working together, unique solutions were developed to solve the problems. In the TASF building, changes in the air handling system and control schemes, controlled the differential pressure between TASF and the adjacent Iowa State University building and allowed the air handling unit

to be placed in a night set-back mode to save energy. Likewise in Wilhelm Hall, an existing fan was utilized to provide general building exhaust to control building pressure to prevent exterior doors from standing open. It also allowed the air handling unit controls to be changed to allow more use of outdoor air for cooling saving energy.

Facility management, Environment, Safety, Health and Assurance and building occupants work together to create and maintain a quality work environment. For example, empty cardboard boxes in workspaces were identified as a potential fire loading problem. These groups worked together to create box pickup days that helped solve the problem. It also highlighted and contributed to the recycling efforts of the Laboratory and Iowa State University. A photograph and description of the activity was included in the University's facilities group newsletter as well the Laboratory's.

The facilities group continues to pursue progress and improvement in the management and maintenance of the real property inventory. A number of opportunities are being explored as ways to upgrade the systems and operations to do a better job of tracking, accounting, managing and planning. In the past, the Condition Assessment Information System (CAIS) was considered too unwieldy for the needs of a small site but has been changed and upgraded significantly since then. It will be evaluated to see if it has the usability and features to add value to the condition assessment and planning activities of the Laboratory. The Laboratory is preparing to make major changes to its administrative hardware and software packages. This is being approached as an opportunity to re-engineer and upgrade the Computerized Maintenance Management Systems (CMMS), decrease the paperwork required, streamline work requests and approval, improve the reporting capability, and provide a more integrated information system.

FIMS

Process Management

Key Activities and Services

- Performing updates to required fields within the database as needed
- Coordinating with Facilities, ESH&A and Accounting to provide timely updates to the database
- Providing data for one time requests that are coordinated by DOE FIMS management
- Performing an annual audit of the information in FIMS
- Participating in FIMS conference calls

Business Results

Assessment Criteria

Customers of the real property management function include Facilities, ESH&A, Accounting, the Director's Office, various program directors or administrative managers, DOE, Iowa State University, and when necessary, various independent property leasing entities.

As detailed in the DOE's FIMS Administrative Guide, a quality assurance plan was created and submitted to DOE-CH. This plan details the procedures established at Ames for validating the data input into FIMS. Copies of this plan are available through the Office of Industrial Outreach & Technology Administration (IOTA).

Summary

Areas of Excellence

The coordination, between Facilities Services, ESH&A, Accounting and IOTA, to collect, compile and input the data required in FIMS is functioning exceptionally well. Updates to the

FIMS database are normally made within 1-2 days of receipt of the information. All required HQ data calls this year were input on time, if not before.

Summary - Overall Facilities Management

The Laboratory continues to make progress and improvement in the area of maintenance of the real property inventory. The departments, systems, and functions that support and maintain the infrastructure of the Laboratory are working well. The 2003 values of the major infrastructure performance metrics provide quantitative support for the Self-Assessment. The FCI continues to decrease even though the improvement is small. Continuous improvement remains a part of the infrastructure management ethic. The MII has already met the 2004 goal. FIMS continues to be updated on a timely basis and coordination between the various departments that provide data for FIMS is outstanding. It is expected that the Laboratory will continue its high level of performance in infrastructure maintenance into the future.

Self-Assessment Rating

The overall rating for the Facilities Management functions is "Outstanding."

TECHNOLOGY TRANSFER AND WORK FOR OTHERS

System Indicators:

OBJECTIVE 1.0: To support DOE's missions through collaborations having the potential to benefit the nation through support of national policy objectives, or to contribute to the national economic and scientific base. This will be accomplished through resource-shared R&D initiatives between the Laboratory and other organizations.

MEASURE 1.1: A variety of media is used to inform the public of the wide range of Laboratory capabilities and mechanisms/tools available to facilitate technology collaborations which support DOE's mission and national policy objectives or to contribute to the national economic and scientific base.

EXPECTATION 1.1: The Laboratory takes a proactive approach to public outreach through such activities as maintaining current information on its Web pages, conducting presentations, issuing press releases and newsletters, distributing up-to-date pamphlets, and attending meetings and conferences where potential collaborations can be nurtured.

OBJECTIVE 2.0: The Ames Laboratory Technology Partnering program is managed efficiently and effectively.

MEASURE 2.1: Technology Transfer and Work for Others objectives and goals are included in programmatic planning.

EXPECTATION 2.1: Laboratory Institutional Plans address past, current and future partnering activities and goals. The information included in the Plans is accurate, useful and timely for use in DOE reviews and reports.

MEASURE 2.2: Compliance with applicable laws and authorities is assured through appropriate controls.

EXPECTATION 2.2.a: Procedures are in place and documented to assure compliance with laws and authorities.

EXPECTATION 2.2.B: Project records are complete and contain the appropriate documentation to demonstrate compliance.

YEAR-END RESULTS:

Measure 1.1: With the help of Public Affairs, numerous press releases have been issued on the Laboratory's science and intellectual properties (see Communication and Trust section of this report). In addition, the Laboratory's website is being revamped and once the Web Committee develops a template for the entire website, the Industrial Outreach website and the Doing Business with Ames Laboratory sections of the Laboratory's website will be redone as well. The basic information that will be available on the revamped website has been accumulated and we are waiting on the Laboratory-wide template before we unveil our new internal and external webpages.

During 2003, the Office of Industrial Outreach has met with various potential, new or existing partners, including:

- IMTT, a small business located in Ames, IA
- The Iowa Soybean Promotion Board
- The Iowa Corn Promotion Board
- Silberline Manufacturing, Tamaqua, PA
- MolyCorp, Inc., Mountain Pass, CA
- IMI Vision, Minneapolis, MN
- IPSCO, Montpelier, IA
- Various Iowa-based Co-ops
- ALD Vacuum Technologies, East Windsor, CT and Hanau, Germany
- Canon Development Americas, Inc.

In addition, our scientists continue to make contacts with industry at their conferences and meetings. Last year, researchers attended the Supercomputing Conference, Magnetism and Magnetic Materials Conference, various Gordon Research Conferences, TMS, APS, ACS, and Pittcon to name a few. Interactions with industry at these conferences are not documented within the Laboratory, but most of our TT agreements are an outgrowth of such contacts.

The overall rating for this measure is “Excellent.”

Measure 2.1: Technology Transfer and WFO objectives and goals are included in the annual performance evaluation of the Manager – Industrial Outreach and Technology Administration. In addition, The DOE’s Technology Transfer Crosscut report, the Summary of WFO report, and the DOC’s Annual Technology Transfer Report all provide indications of the results of technology transfer at Ames Laboratory and project the work effort for at least the current year plus one. The Laboratory’s Institutional Plans include a section on WFO following the guidance provided by DOE-SC, and the Resource Projection section includes actual and projected funding of WFO. The Draft and Final Institutional Plans are completed within the time specified by DOE. IOTA works closely with the DOE-CH counterpart in helping to prepare DOE-CH’s WFO report to DOE-HQ.

The overall rating for this measure is “Outstanding.”

Measure 2.2: All CRADAs are reviewed and signed by DOE prior to signature approval by the Laboratory and any WFO that has non-standard terms and conditions is reviewed by DOE-CH prior to the Laboratory entering into the agreement. All CRADAs have a joint work statement prepared and submitted to DOE-CH prior to negotiations and all WFO’s have a Participant Information Questionnaire (PIQ) completed and sent to DOE-CH for approval prior to negotiations taking place. All CRADAs and WFOs are in accordance with DOE Orders 483.1 and 481.1, respectively.

The overall rating for this measure is “Outstanding.”

Compliance Items:

Work performed for other Federal agencies that is in support of Counter Terrorism and Homeland Security is imposed at a zero percent Federal Administrative charge, as directed by the DOE Chief Financial Officer in his May 8, 2002, memorandum.

Critical Items:

None

Significant Changes:

The Ames' DOE-CH technology transfer SME retired in early January. As of this report, a permanent replacement has not been announced.

Self-Assessment

Background

Scope and Organizational Overview

The Ames Laboratory utilizes a multifaceted approach and extensive cooperation with its Contractor (ISU) to bring the results of its research programs to public and private sector beneficiaries and to enhance the U.S. industrial competitiveness. Major technology transfer efforts include: the maintenance of an Office of Research and Technology Application (ORTA), development of potential research or licensing partners, patenting and licensing of Laboratory inventions, extensive publication in the open literature, responding to requests for technical information and assistance, distribution of special bulletins and progress reports, collaborative research activities with other universities and other industrial scientists, the presentation of seminars and invited talks on Ames Laboratory research at public and industrial forums, the conduct of workshops, and cooperative projects with other agencies and industry.

Technical outreach and technology activities are significant and increasing. The goal of the Office and the Laboratory is to efficiently and effectively work to enhance Technology Transfer activities in the area of CRADAs and WFOs and thus bring additional research monies into the Laboratory. In FY2003, the Office once again experienced a huge increase in workload due to the formation of the Biorenewable Resources Consortium and in our success in getting WFO – other federal agencies. Though the CRADA load substantially diminished over the previous year, WFO activity remained constant and preparation on review of Non-Disclosure Agreements, and Materials Transfer Agreement increased significantly. In addition, many of the current CRADAs and WFOs required amendments, either extending the period of performance or adding new tasks/monies to the existing agreement. Each agreement, whether they are non-federal or interagency takes a significant amount of time; not just negotiating the terms and conditions, but also in the preparation of associated paperwork for DOE (i.e. the WFO PIQ (Proposal Information Questionnaire), the CRADAs Joint Work Statement, and exception to full cost recovery requests) as required under their associated DOE Orders.

Process Management

Key Activities and Services

The Industrial Outreach and Technology Administration Office encompasses the following major Technology Transfer functions and areas of activity:

- Technology Development, Application and Transfer; ORTA
- Work for Others Program (WFO)
- Cooperative Research and Development Agreements (CRADAs)
- Non-disclosure Agreements (NDAs)
- Material Transfer Agreements (MTAs)
- Program Management for the SC-LTR program
- Ombuds
- Preproposal management, review and approval
- Conflict of Interest
- R&D database

The tasks and responsibilities necessary to serve these activities are presently assigned to the following positions and individuals:

Manager- Debra Covey	0.40 FTE
Ombuds - Todd Zdorkowski	0.05 FTE
Secretary – C. Cowan	0.40 FTE
Student Hourly – R. Wolterman	0.02 FTE

In addition, the Office's responsibilities encompass Intellectual Property, Export Control, space, and FIMS functions. These functions will not be discussed in this report.

Business Results

Assessment Criteria

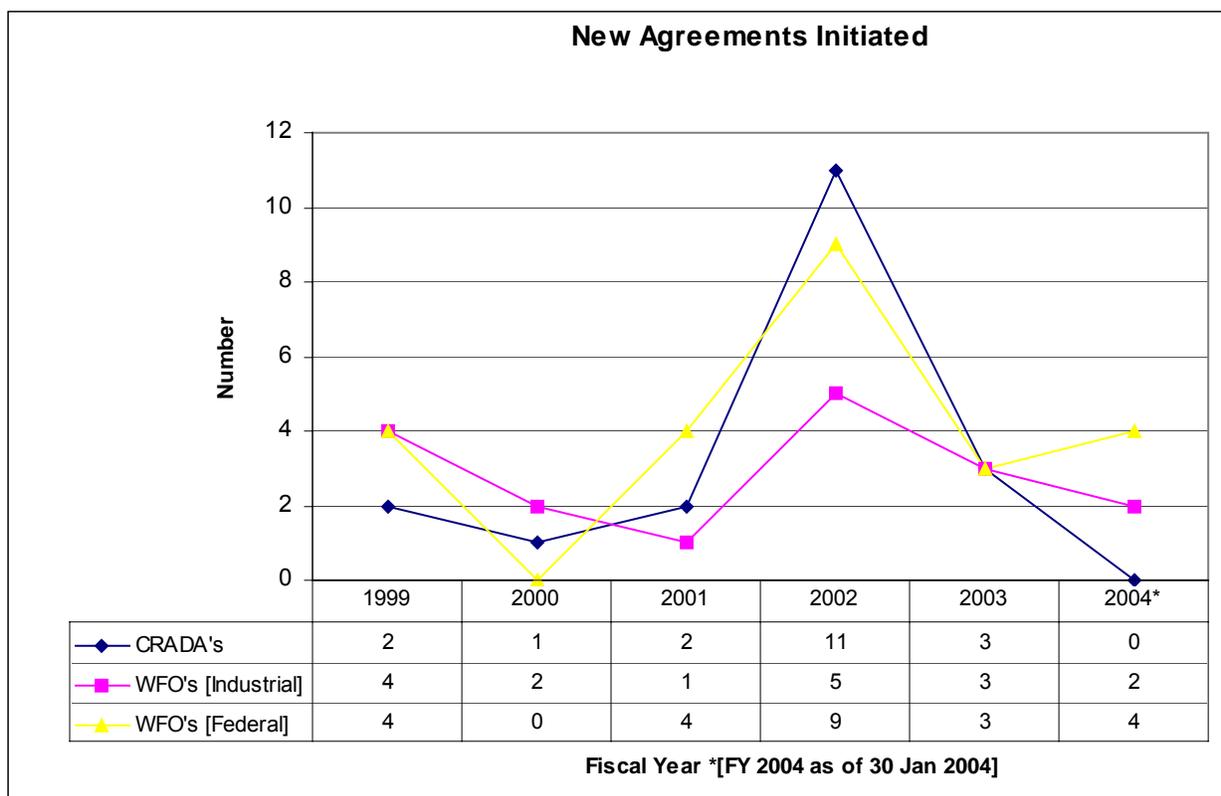
Any assessment of the success of a technology transfer program needs to look at the amount of work being generalized by industrial partners or other federal agencies, and their satisfaction with the research attained through their agreements with the Laboratory. Both customer satisfaction surveys and repeat business are indicators of this satisfaction.

Another indicator of a successful technology transfer program is the number of licensing agreements and dollars of licensing income received based on Laboratory intellectual property.

Summary

Areas of Excellence

The following chart shows a five year (1999-2003) actual history of CRADA and WFO signed agreements and agreements initiated so far in FY2004. The increase in WFO is expected to continue for the near term. In addition, much time is spent on negotiating amendments to existing agreements and the review/modifications of Non-disclosure agreements and Material Transfer Agreements. Also, in FY2003, the Laboratory had several repeat customers from past completed agreements entering into new agreements.



As mentioned above, the Laboratory's has been experiencing an increased workload in its technology transfer processes. At the same time, staffing for the office has diminished. As a result, more effective and efficient methods to accomplish the increased workload are being implemented (see *Opportunities for Improvement and/or notable practices*, below).

Another indicator of the success of the technology transfer activities at Ames is the number of patents, patent applications and licenses based upon Laboratory research. While IOTA cannot take credit for licensing our technologies (our Contractor licenses Laboratory intellectual property), this is still an indication that there are Industries very interested in the research at Ames. The numbers for FY2003 are shown in the table below:

FY2003	Number
Licenses and Options	4
Patents received	8
Patent Applications and Provisionals filed	12
Invention Disclosures	5

In fact, based on data submitted to DOE for the Department of Commerce, Technology Transfer report for FY2003, Ames Laboratory was ranked third (behind LLNL and PNNL) in the amount of earned royalty income out of the 24 DOE Laboratories and Plants. Considering that Ames Laboratory is one of the smallest, if not the smallest DOE Laboratories in terms of funding, makes this 3rd place even more indicative of the outstanding research and technology transfer efforts at Ames!

Opportunities for improvement and/or notable practices.

Because of the tremendous growth in WFO at Ames Laboratory, in 2003, a checklist was developed to track the WFO and CRADA processes internally so that items needed to be completed on pending Agreements could be quickly ascertained and handled. In addition, the checklist provides our staff with a quick review of what steps need to be completed without having to go through the hardcopy Agreement file.

Improvements were also made to the internal R&D database that is used to track research projects at the Laboratory. This resulted in a quicker, easier method of querying the database for information, and including amendments, ending dates, and industrial contact information.

Customer satisfaction surveys need to be sent to Industrial Partners at the completion of an Agreement. Due to the small staff and the increased workload over the past couple of years, customer surveys have not been sent. The Office will try to send these surveys to clients this fiscal year and will report on the results (if any) in next year's self-assessment.

Self-Assessment Rating

Based upon the above discussion, the Laboratory self-assessment rating for Technology Transfer and WFO is "Outstanding."

APPENDICES

Contractor Derived Replacement Plant Value Ames Laboratory

September, 2003

History

The Self-Assessment activities in CY1997 initiated a formal process of Condition Assessment Survey (CAS) by the Facilities Services Group (FSG). The initial survey covered approximately 1/3 of the facility. The balance of the facility was surveyed over the next two years to establish a process where buildings would be re-inspected on a three year cycle. The Task A-E was utilized to develop a replacement plant value for those buildings surveyed in the CAS. This RPV was only used in the CAS report and the Self-Assessment. Starting in 1998, there was a requirement that the deferred maintenance data be entered in FIMS. FIMS internally calculated a Facility Condition Index (FCI) based on the Current Plant Value in FIMS that came from accounting records. In 1999, the FCI reported in the Self-Assessment then used the FIMS values for CPV so that the values would be consistent between FIMS and the Self-Assessment. CH review of the Self-Assessment raised the issue of an inconsistent basis with prior years for doing trends. This trending was also complicated by the fact that for the first three years additional buildings were added to the survey each year. The 2000 Mid-year Self-Assessment Report contained the following Critical Item:

The Current Plant Value (CPV) is utilized in determining the Facility Condition Index measure for Objective 1. Issues with the methodology were raised as a result of the review by CH. Investigation determined that the values used in CY1999 from the Facility Information Management System (FIMS) were inconsistent with the previous values. The values in FIMS were provided from the accounting system with a valuation algorithm that does not do a good job of calculating Current Plant Value. Subsequent discussions with CH and Ames Group personnel have provided guidance on how to proceed. A standardized CPV will be documented prior to the end of year report and corrected FCI values for prior years will be included for trending purposes.

The accounting algorithm incorporated the full value of all capital improvements in the accounting record even if it replaced major pieces of infrastructure and the present worth factors used only picked up escalation going back 30 years. Even though the effect of these two assumptions tended to offset each other, they each introduced different levels of inaccuracy into the calculations. Because of this, FSG developed a standard methodology that used a web-based standard construction cost estimator for the laboratory buildings. The replacement plant value of the other buildings applied the Marshall & Swift current value factors to the original acquisition to generate the RPV. The values were then escalated each year using the Marshall and Swift factor. Beginning in 2000, these values were input in FIMS as the contractor derived values for RPV and used in the Self-Assessments.

In late calendar year 2001, the DOE was looking at the issue of the FIMS-generated RPV and site factors. The FIMS-generated values uses the usage code/design usage code and the square footage data to generate a plant value. Ames Laboratory compared the contractor derived values with the FIMS-generated RPV's using the FIMS default site factor. It was concluded that the contractor derived values were more accurate than the FIMS-generated values. The Laboratory continued to use the contractor derived values.

In April 2002, an updated methodology was received for accounting to use to compute the CPV for the Property Valuation Report. The new method addressed both of the problems with the previous method. Even so, it was decided to continue using the RPV values from our existing methodology that had been in place since 2000. By continuing to use the existing values as the contractor derived values, the Laboratory had a consistent RPV basis for reporting in our Self-Assessment and for establishing trends of the Facility Condition Index (FCI).

In February 2003, the Laboratory was notified that the CPV (accounting method) was no longer required for the Property Valuation Report and it was unlikely to be required in the future. However, there was encouragement (Email - Max Rosenquist, CH, 2/28/03) to continue to update the CPV for use in generating the RPV:

However, in addition to feeding HQ, the property valuation report was used to populate FIMS RPV's. To the best of my knowledge all CH OSF RPV values are generated based on the CPV methodology. Some sites also use CPV for bldg RPV's and other are considering this method for bldg RPV. So I presume most sites will continue to do the at least the OSF real property portion of the property valuation report.

I continue to highly recommend using the new CPV method utilized in last year's property valuation for all bldg and OSF FIMS RPV's except for the assets where the weighted margin of error is high.

I will continue to support your efforts by providing CPV multipliers and by creating an Excel file that has the FY02 Improvements Data. You can use this file to copy data into the file that you submitted last year. You will need to manually add assets that you disposed of and assets that you acquired.

Please advise if you plan to use the CPV method for this year's update of FIMS RPV's and whether you plan to use CPV for both bldgs and OSF or just for OSF. Also please call to discuss when you will need my Excel file. Creating that file is not currently high on my "to do list."

Within the past year, the issue of the Maintenance Investment Index (MII) has also become much more prominent. Like the FCI, the MII is dependent on the RPV values. It is defined as the maintenance expenditures divided by the RPV, expressed as a percentage. The significance of the RPV calculations is reflected in the 9/26/03 email from John Yates:

The importance of accurate RPV estimates is becoming more urgent as the Department moves to implement Facility and Infrastructure (F&I) performance measures based on RPV. To help ensure consistency in how SC does business and accuracy in our RPV estimates and performance measures that rely on them, we have asked Max Rosenquist to help review and comment on the methods being employed by each SC site.

It is also clear from this email that the CPV method for determining the RPV is well accepted and supported. Discussions with Max Rosenquist indicated that many of the labs are using the CPV method, ANL, PPPL, Fermi and PNNL among them.

Action Plan

After consulting with Max Rosenquist and Roxanne Purucker, the Laboratory decided to use the CPV method to generate the RPV to be input in FIMS and used in the FCI and MII calculations. It results in a lower RPV for the laboratory, which increases both the FCI and the MII. This improves the MII but worsens the FCI. The decision was made, in large part, so that the RPV is based on a well-accepted methodology and is consistent with what other sites are using. Consistency with other sites is important since performance measures based on RPV are being implemented across the entire complex of laboratories. It was decided to input the numbers in FIMS in time for the FY2003 "snapshot" of the database. FSG and accounting personnel coordinated to escalate the CPV values for 2003 and establish how they will be updated in the future. The 2003 CPV values were forwarded to the FIMS coordinator to input in the FIMS database as the contractor derived RPV values to use for FY2003.