

DOE
SALT REPOSITORY PROJECT OFFICE
(SRPO)
QUALITY ASSURANCE AUDIT REPORT
NO. PB-86-3-E

OF

PARSONS BRINCKERHOFF/PB-KBB
11767 KATY FREEWAY, SUITE 700
HOUSTON, TEXAS 77079

AUDIT DATES
APRIL 23-25, 1986

8608150120 860717
PDR WASTE
WM-16 PDR

EXECUTIVE SUMMARY

A QA audit of Parsons Brinckerhoff/PB-KBB (PB/PB-KBB) was conducted on April 23 through April 25, 1986, at their facilities in Houston, Texas. The audit scope included evaluation of QA program effectiveness and follow-up on previous audit corrective actions.

The audit team concluded that the PB-PB/KBB staff had produced the Title I plans and specifications for the ESF in compliance with their established QA program and procedures. However, individual problems were noted where procedural compliance could not be established with the available documentation reviewed. The QA program overall effectiveness was weakened by the limited available manpower, their in-line involvement in day-to-day work activities, and half time commitment to the project by the project QA Manager.

The audit team found that computer code verifications were well implemented and documented as were the internal design review board functions. The PB/PB-KBB staff were quite knowledgeable of their functions and appeared to be dedicated to delivering a quality product.

The audit resulted in four (4) findings and one (1) observation. The findings were in areas of review procedure compliance, corrective action timeliness, audit procedure compliance, and personnel training. The observation dealt with the storage of training records.

Audit No.: PB-86-3-E

Organization Audited: Parsons Brinckerhoff/PB-KBB

Dates of Audit: April 23-25, 1986

Purpose:

The audit was an annually scheduled DOE/SRPO evaluation of QA program effectiveness and follow-up on previous audit corrective actions.

Audit Team and Scope:

The audit team consisted of H. Nunes - Lead Auditor, BPMD; M. Gildner - Auditor-in-training, BPMD; D. Anderson - Auditor-in-training, DOE/SRPO; T. Solack - Technical Observer, BPMD, S. Webster - Technical Observer, DOE/SRPO, and T. Verma - Observer, NRC. Areas evaluated were (1) computer code verifications (2) design review comment resolution, (3) QA audit program, (4) personnel training and qualifications, (5) record storage, and (6) non-conforming conditions.

Involved Personnel:

A pre-audit meeting was held to discuss the content and schedule of the audit and to provide Parsons Brinckerhoff-PB/KBB management an opportunity to ask questions regarding the audit. Attachment 1 is the list of personnel who attended the pre-audit meeting, attending the post-audit meeting, or were contacted during the course of the audit.

QA Program Effectiveness:

The audit team found that, in general, the PB/PB-KBB had produced acceptable Title I plans and specifications in compliance with their established QA program. A review of the corrective actions for the 1985 audit AARs was conducted and found to be acceptable. However, the failure of timely corrective actions and examples of failure to follow established QA procedures by QA indicate that the effectiveness of QA is impeded by its limited available resources and time commitments.

Audit Results:

The audit team noted that computer code verifications were being satisfactorily performed, the document control system was operating satisfactorily, the Title I drawings and specifications were satisfactorily prepared in accordance with the EP 4.02, "Design Review Board" procedure, and the detailed design criteria was properly prepared.

The audit team was able to trace data from the calculation sheets to the design output drawings.

Four (4) findings and one (1) observation were issued for the criteria audited. Additional comments are included for review by PB/PB-KBB management. The team identified that:

- (1) Documentation could not be produced for four (4) of ten (10) randomly selected staff members showing that they attend all of six (6) randomly selected training topics. (AAR No. 1)
- (2) The audit team found that IN-Work Review Meeting Minutes M146 and M152 are on file without any record of follow up corrective actions nor Quality Assurance Verification of the stipulated corrective action. (AAR. No. 2)
- (3) Corrective actions required by an internal Nonconformance Report ES-14-02 dated March 25, 1985, and corrective actions required by a Management Assessment dated July 31, 1985 have not been implemented. (AAR No. 3)
- (4) The audit team found that the audits as conducted do not adequately assess the effectiveness of the QA program or procedures as evidenced by:
 - 1) No audit schedule for 1986 had been prepared.
 - 2) No audit plans had been prepared.
 - 3) No audit/surveillances were conducted of the design/specification review process. (AAR No. 4)
- (5) The audit team noted that training session attendance lists and lesson plans had not been transferred to Document Control Center since December, 1984. The records were, as of the audit date, retained in Quality Assurance Department files. (AAR No. 5)

The audit team commented on the following:

- (1) No central code custodial control is exercised over the verified computer programs.
- (2) PB/PB-KBB monthly QA status report has shown no QA activities from November 1985 through April 1986.
- (3) Procedure EP 4.01 requires a revision to reflect actual in-house review activities.
- (4) PB/PB/KBB Quality Assurance Project Plan, Section 2, Part F, currently calls for training on individual procedures. Training is actually by subject encompassing several procedures. Procedures and/or practice should be brought into agreement.
- (5) PB/PB-KBB revisions to their QA Program should reflect the current DOE reporting relationship, and delete reference to BPMD.
- (6) The action item list noted in procedure EP 6.00 should reflect the weekly in-house interface meetings.
- (7) QA staff needs to be dedicated to ESF salt project activities throughout the Title II design effort.

* * * * *

Prepared by: H. P. Nunes Date 12 MAY 1986
H. P. Nunes, Lead Auditor

Concurred: F. C. Hood Date 5-12-86
F. C. Hood, BPMD QAD Manager

Approved: _____ Date _____
T. J. Reese, SRPO Chief, QA

PERSONNEL CONTACTED

R. Janowski 1,2,3	- Project Manager
M. Mirza 1,2,3	- Deputy Project Manager
K. Kennedy 1,3	- Manager of Administration
A. Cooley 1,2,3	- Mining Manager
D. Winsor 1,2,3	- Environmental Managers
R. Nolin 1,2,3	- QA Manager
J. Echemendia 1,2,3	- Engineering Manager
C. Lee 2	- Document Control Center
H. Glesen 2	- Mining Engineer

1 = Attended pre-audit conference
2 = Contacted during audit
3 = Attended post-audit conference



**SALT REPOSITORY
PROJECT OFFICE
(SRPO)**

AUDIT ACTION REPORT

PAGE 1 OF 2

FINDING

OBSERVATION

CAUSE CODE

AUDIT NUMBER PB-86-3-E

AAR NUMBER 01

AUDITOR

AUDITED ORGANIZATION Parsons Brinckerhoff/PB-KBB
LOCATION 11767 Katy Freeway, Suite 700, Houston, Texas 77079
ACTIVITY Exploratory Shaft Facility Architect/Engineer

REQUIREMENT(S) Refer to continuation sheet

NONCONFORMANCE Refer to continuation sheet

DEF. CODE
TBD

AUDI-TEE

DISCUSSED WITH R. Janowski

AUDITOR

SIGNIFICANT CONDITION ADVERSE TO QUALITY?
YES NO

CAR ISSUED? YES NO
CAR NUMBER NA

PREPARED BY H. Nunes DATE 04/25/86

AUDITEE

CORRECTIVE ACTION PROPOSED AND/OR IMPLEMENTED (Including scheduled completion date, action to prevent recurrence, and root cause of the nonconformance)

CAUSE CODE
|

AUTHORIZED REPRESENTATIVE _____ DATE _____

AUDI-TOR

CLOSED BY _____ DATE _____



CONTINUATION SHEET

Audit Report No. PB-86-3

AAR No. 01

Requirement

ANSI/ASME NQA-1, Section 2, Basic Requirement requires that "The program shall provide for indoctrination and training, as necessary, of personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained."

PB/PB-KBB Quality Assurance Program Plan, Section 2, Subpart F, Training and Indoctrination, requires that "The Project indoctrinates and provides the necessary training for its personnel in the requirements of the project and the quality assurance aspects of the specific tasks to which they are assigned."

Nonconformance

Contrary to the above requirements, documentation could not be produced for four (4) of ten (10) randomly selected staff members showing that they had attended all of six (6) randomly selected training topics.

Comment

- (1) Training records are merely a file of training class attendance sheets and of one-on-one training session documentation forms. A matrix of personnel and training courses held was maintained early in the contract but not kept updated.
- (2) Training classes are by subject matter rather than individual procedures which better defines function and associated interfaces. This is contrary to the QAPP section cited above which further states that "Individual procedures are addressed..." There was no documentation in the course outlines as to specifically which procedures were covered.



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FINDING

OBSERVATION

CAUSE CODE

AUDIT NUMBER PB-86-3-E

AAR NUMBER 02

AUDITOR

AUDITED ORGANIZATION Parsons Brinckerhoff/PB-KBB
LOCATION 11767 Katy Freeway, Suite 700, Houston, Texas 77079
ACTIVITY Exploratory Shaft Facility Architect/Engineer

REQUIREMENT(S) Refer to continuation sheet

NONCONFORMANCE Refer to continuation sheet

DEF. CODE
TBD

AUDI-TEE

DISCUSSED WITH R. Janowski

AUDITOR

SIGNIFICANT CONDITION ADVERSE TO QUALITY?

YES

NO

CAR ISSUED? YES NO

CAR NUMBER NA

PREPARED BY H. Nunes DATE 04/25/86

AUDITEE

CORRECTIVE ACTION PROPOSED AND/OR IMPLEMENTED (including scheduled completion date, action to prevent recurrence, and root cause of the nonconformance)

CAUSE CODE
|

AUTHORIZED REPRESENTATIVE _____ DATE _____

AUDI-TOR

CLOSED BY _____ DATE _____



CONTINUATION SHEET

Audit Report No. PB-86-3-E

AAR No. 02

Requirements

ANSI/ASME NQA-1, Section 5, Basic Requirement, requires that "Activities affecting quality shall be prescribed by and performed in accordance with documented instructions, procedures or drawings of a type appropriate to the circumstances."

PB/PB-KBB Quality Assurance Program Plan Section 3, Subpart D requires, in part, that "The resolution of all design comments will be documented and be included in the project records."

PB/PB-KBB Engineering/Design Procedure EP-4.01, Paragraph 3.3 requires in part that "Copies of review comments and dispositions or deferred disposition date shall be attached to an internal memo to the project manager and logged into the Project files". Paragraph 3.4 requires that "The Quality Assurance Manager shall verify that all in-work review action items have been recorded and acted upon prior to release of the design review report."

Nonconformance

Contrary to the above, the audit team found that IN-Work Review Meeting Minutes M146 and M152 are on file without any record of follow up corrective actions nor Quality Assurance Verification of the stipulated corrective action.



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PROJECT OFFICE
(SRPO)**

AUDIT ACTION REPORT

AUDITOR	PAGE <u>1</u> OF <u>2</u>	CAUSE CODE
	FINDING <input checked="" type="checkbox"/>	AUDIT NUMBER PB-86-3-E
	OBSERVATION <input type="checkbox"/>	AAR NUMBER 03

AUDITOR	AUDITED ORGANIZATION Parsons Brinckerhoff/PB-KBB
	LOCATION 11767 Katy Freeway, Suite 700, Houston, Texas 77079
	ACTIVITY Exploratory Shaft Facility Architect/Engineer

AUDITOR	REQUIREMENT(S) Refer to continuation sheet
	NONCONFORMANCE Refer to continuation sheet

DEF. CODE
TBD

AUDI-TEE	DISCUSSED WITH <u>R. Janowski</u>
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AUDITOR	SIGNIFICANT CONDITION ADVERSE TO QUALITY?	CAR ISSUED? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	CAR NUMBER <u>NA</u>

AUDITOR	PREPARED BY <u>H. Nunes</u>	DATE <u>04/25/86</u>
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AUDITEE	CORRECTIVE ACTION PROPOSED AND/OR IMPLEMENTED (Including scheduled completion date, action to prevent recurrence, and root cause of the nonconformance)

CAUSE CODE
1

AUDI-TEE	AUTHORIZED REPRESENTATIVE _____	DATE _____
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AUDI-TOR	CLOSED BY _____	DATE _____
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CONTINUATION SHEET

Audit Report No. PB-86-3-E
AAR No. 03

Requirements

ANSI/ASME NQA-1 Section 16, Basic Requirement, requires that "Conditions adverse to quality shall be identified promptly and corrected as soon as practical."

PB/PB-KBB Quality Assurance Program Plan, Section 16, Subpart A requires "Conditions adverse to quality shall be promptly identified and rectified as soon as practical."

PB/PB-KBB Quality Assurance Operating Procedure 8.00 Paragraph 2 "...establish(es) a method whereby conditions adverse to quality shall be identified promptly and corrected as soon as practical."

Nonconformance

Contrary to the above requirements, two (2) items requiring corrective action have not been completed in a timely manner:

- (1) NCR ES-14-02 dated March 25, 1985, was issued concerning procurement activities which were conducted without procedures governing them. The condition was closed pending approval of the procedure. The QAPP was revised in August, 1985 to address the procurement process and as of the audit date implementing procedures have been developed, but not approved for use.
- (2) A Management Assessment was conducted of PB/PB-KBB on July 30-31, 1985, and identified the need to revise EP-4.01 "In-Work Reviews." No action has been taken as of the audit date.

PB/PB-KBB's Monthly QA Status Reports to SRPO for the timeframe 11/85 through 04/86 indicate no QA activities conducted on the ESF Project.



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FINDING

OBSERVATION

CAUSE CODE

AUDIT NUMBER PB-86-3-E

AAR NUMBER 04

AUDITOR

AUDITED ORGANIZATION Parsons Brinckerhoff/PB-KBB
LOCATION 11767 Katy Freeway, Suite 700, Houston, Texas 77079
ACTIVITY Exploratory Shaft Facility Architect/Engineer

REQUIREMENT(S) Refer to continuation sheet

NONCONFORMANCE Refer to continuation sheet

DEF.
CODE
TBD

AUDI-
TEE

DISCUSSED WITH R. Janowski

AUDITOR

SIGNIFICANT CONDITION ADVERSE TO QUALITY?

YES

NO

CAR ISSUED? YES NO

CAR NUMBER NA

PREPARED BY H. Nunes DATE 04/25/86

AUDITEE

CORRECTIVE ACTION PROPOSED AND/OR IMPLEMENTED (Including scheduled completion date, action to prevent recurrence, and root cause of the nonconformance)

CAUSE
CODE

AUTHORIZED REPRESENTATIVE _____ DATE _____

AUDI-
TOR

CLOSED BY _____ DATE _____



CONTINUATION SHEET

Audit Report No. PB-86-3-E

AAR No. 04

Requirement

ANSI/ASME NQA-1 Section 18, Basic Requirement, requires in part that "Planned and scheduled audits shall be performed to verify compliance with all aspects of the quality assurance program and to determine its effectiveness.

PB/PB-KBB Quality Assurance Program Plan, Section 18, Part A requires in part "...Audits shall be performed to...determine the effectiveness of the Quality Assurance Program..." Part B requires "Quality Assurance,..., shall prepare an audit schedule for the project. The schedule shall be prepared to provide coverage and coordination with ongoing quality assurance program activities."

PB/PB-KBB Quality Assurance Operating Procedure 1.04, Section 4.2 requires in part that "a. Audits shall be preplanned and prescheduled." "b. Audit plans shall identify the audit scope, applicable requirements, and the operations to be audited."

Nonconformance

Contrary to the above; the audit team found that the audits as conducted do not adequately assess the effectiveness of the QA program or procedures.

- (1) No audit schedule for 1986 had been prepared as of the audit dates.
- (2) No audit plans had been prepared.
- (3) No audit/surveillances were conducted of the design/specification review process.

Comments

- (1) QAOP 1.04, Section 4.6, Subpart b implies that any action to prevent recurrence shall be recommended in the audit findings and not proposed by the audited group. Therefore, notice of the reviewed audits addressed actions to prevent recurrence.
- (2) There was no evidence of technical input into the audit process.



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AUDIT ACTION REPORT

PAGE 1 OF 2

FINDING

OBSERVATION

CAUSE CODE

AUDIT NUMBER PB-86-3-E

AAR NUMBER 05

AUDITOR

AUDITED ORGANIZATION Parsons Brinckerhoff/PB-KBB
LOCATION 11767 Katy Freeway, Suite 700, Houston, Texas 77079
ACTIVITY Exploratory Shaft Facility Architect/Engineer

REQUIREMENT(S) Refer to continuation sheet

NONCONFORMANCE Refer to continuation sheet

DEF. CODE
TBD
1

AUDI-
TEE

DISCUSSED WITH R. Janowski

AUDITOR

SIGNIFICANT CONDITION ADVERSE TO QUALITY?

YES

NO

CAR ISSUED? YES NO

CAR NUMBER NA

PREPARED BY H. Nunes DATE 04/25/86

AUDITEE

CORRECTIVE ACTION PROPOSED AND/OR IMPLEMENTED (Including scheduled completion date, action to prevent recurrence, and root cause of the nonconformance)

CAUSE CODE
1

AUTHORIZED REPRESENTATIVE _____ DATE _____

AUDI-
TOR

CLOSED BY _____ DATE _____



CONTINUATION SHEET

Audit Report No. PB-86-3-E

AAR No. 05

Requirement

ANSI/ASME NQA-1 Section 17 Basic Requirement requires in part that "Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented."

PB/PB-KBB Quality Assurance Operating Procedure 1.02 Section 3.1 requires in part that "The Quality Assurance Manager is responsible for identification of quality assurance records to be retained, submitting these records to the Document Control Center and..."

Nonconformance

Contrary to the above, the audit team noted that training session attendance lists and lesson plans had not been transferred to Document Control Center since December, 1984. The records were, as of the audit date, retained in Quality Assurance Department files.



T. Verma

Department of Energy
Chicago Operations Office
Salt Repository Project Office
505 King Avenue
Columbus, Ohio 43201-2693
Commercial (614) 424-5916
F.T.S. 976-5916

June 23, 1986

Mr. R.H. Janowski
Project Manager
Parsons Brinckerhoff/PB-KBB
11767 Katy Freeway, Suite 700
Houston, TX 77079

Dear Mr. Janowski:

SUBJECT: SRPO QA AUDIT PB-86-3-E

Reference: Letter QA# 139-86 dated June 13, 1986 from Reese to Janowski

The purpose of this letter is to provide a new page three of QA Audit Report No. PB-86-3-E. The original page three with the referenced letter was inadvertently sent without my signature. The new page has been signed and is to be inserted in the audit report.

Sincerely,

A handwritten signature in cursive script, appearing to read "T.J. Reese".

T.J. Reese
Chief
Quality Assurance
Salt Repository Project Office

SRPO:DLA:max:1300JD

Mr. R.H. Janowski

- 2 -

June 23, 1986

Enclosure:
As Stated

cc: J. Neff, SRPO
R. Lahoti, SRPO
S. Webster, SRPO
E. Langston, DOE-HQ, RW-43
C. Newton, DOE-HQ, RW-23
M. Flannigan, DOE-CH
E. Sulek, Weston
T. Verma, NRC
V. Lepardo, PB/PB-KBB
R. Nolin, PB/PB-KBB
F. Hood, BPMD
J. Lefman, BPMD
H. Nunes, BPMD
M. Gildner, BPMD


QA# 165-86

The audit team commented on the following:

- (1) No central code custodial control is exercised over the verified computer programs.
- (2) PB/PB-KBB monthly QA status report has shown no QA activities from November 1985 through April 1986.
- (3) Procedure EP 4.01 requires a revision to reflect actual in-house review activities.
- (4) PB-PB/KBB Quality Assurance Project Plan, Section 2, Part F, currently calls for training on individual procedures. Training is actually by subject encompassing several procedures. Procedures and/or practice should be brought into agreement.
- (5) PB/PB-KBB revisions to their QA Program should reflect the current DOE reporting relationship, and delete reference to BPMD.
- (6) The action item list noted in procedure EP 6.00 should reflect the weekly in-house interface meetings.
- (7) QA staff needs to be dedicated to ESF salt project activities throughout the Title II design effort.

* * * * *

Prepared by:  Date 12 MAY 1986
H. P. Nunes, Lead Auditor

Concurred:  Date 5-12-86
F. C. Hood, BPMD QAD Manager

Approved:  Date 6/18/86
J. J. Reese, SRPO Chief, QA

AGENDAUnderground Testing WBS 6.9 Planning and Management Meeting
June 17-18, 1986, in Redmond, Washington

Purpose of Meeting: To discuss the current status of the project, develop plans for the out-year, agree on a schedule based on the networks, develop a schedule for future deliverables, prepare a strategy to support the SCP effort and to discuss the budget.

June 17:

8:30	Welcome by Golder	Golder
8:40	Purpose of meeting and project status	J. S. Treadwell
9:00	Current status of in situ testing	H. N. Kalia
	1. Networks	
	2. Schedules and milestones	
	3. Budget →	
	4. SCP participation	
10:00	Break	
10:15	Methodology for tracking deliverables (review process and steps)	R. Wright
11:00	Golder planning	Golder
12:00	Lunch	
1:30	Status of the activities	Golder
2:30	Generic activity plans (type and quantity)	Golder/ONWI
3:30	Discuss and agree on document tracking methodology	Golder/ONWI

June 18:

8:30	Prepare schedule and plans for FY 1987 - 1992	Golder/ONWI
12:00	Lunch	
1:30	Golder budget basis	Golder
2:30	ONWI budget and basis	H.N. Kalia/R.F. Cook
3:30	Develop an agreement on the budget	Golder/ONWI
4:30-5:00	Summation ^{AND} and Action Items	3:30-4:30 Golder Golder

REVIEW SCHEDULE FOR RECOMMENDATION OF
STUDY PLAN SUBMITTALS TO STATE

<u>Study Plan</u>	<u>Received by SRPO</u>	<u>Technical Review Completed</u>
Cultural Resources	6/24	7/24
Met/AQ	6/24	7/24
Ecosystems	6/30	7/30
Water Resources	7/02	8/02
Soils	7/02	8/02
Environmental Background Rad.	7/08	8/08
Aesthetics	7/09	8/09
Acoustics	7/11	8/11
Land Use	7/15	8/15
Transportation	7/15	8/15
Utilities	7/17	8/17
Salt	7/23	8/23

Attachment No. 5.



BATTELLE Project Management Division
505 King Avenue
Columbus, Ohio 43201-2693

June 2, 1986

J. L. England, Chief
Contracts and Administration, SRPO

TRIP REPORT BY R. A. WAGNER OF RE/SPEC INC.
BPMD CONTRACT NO. E512-10000

Please find attached the trip report from Mr. R. A. Wagner of RE/SPEC Inc. The trip report describes his travel to Ghent, Belgium, and Hannover, West Germany.

The primary purpose of this trip was to attend the 2nd International Symposium on Numerical Models in Geomechanics at Ghent and to present a paper entitled "An Evaluation of Constitutive Models for Salt Creep". The secondary purpose of the trip was to visit Professor J. P. Ottoy of the Applied Mathematics Department at the University of Ghent to discuss their computer program for a nonlinear curve-fitting technique.

While attending the five day conference in Ghent, Mr. Wagner was invited to visit the facilities of the Federal Institute for Geosciences and Natural Resources (BGR) in Hannover. He spent a day touring their new core storage and rock testing laboratory facility and discussing information related to his presentation.

If you have any questions, please contact Dr. Howard Hume on Extension 7570.


Wayne A. Carbiener
Program Manager

WAC/HH:sgb:bn

In triplicate

Attachments

cy: K. K. Wu, SRPO

CP #152-86
WBS #1.3.4.2.1
ONWI #021-86-123

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Washington, D. C. 20545
Attention: R. Caudle, Director

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Attention A. Flieger

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Attention H. Jaffe, IE-12

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International Program Office, Weston
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Attention E. McCallum