

Con Edison

Quality Assurance And Reliability

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PROTECTION OF RECORDS

- Fire Survey of Con Edison
Record Storage Areas
- Results of ANSI N 45.2.9 (5.6)
"Nine Considerations".

Vincent J. Ammirato
Quality Assurance
January 30, 1978

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Protection of Records

- Fire Survey of Proposed Con Edison Record Storage Areas
- Results of ANSI N 45.2.9 'Nine Considerations'

Introduction

Part of our commitment to the NRC on June 7, 1977 included compliance to Regulatory Guide 1.88, 'Collection, storage & maintenance of nuclear power plant Quality Assurance records'- Oct. 1976. In addition, ANSI N 45.2.9 - 1974 'Requirements for collection, storage & maintenance of quality assurance records for nuclear power plants', Section 5.6 Facility. 'Nine Construction Features' were reviewed in conjunction with NFPA standard number 232 'Protection of Records' - 1975. This report lists the results of several surveys made against these standards in order to justify the use of fire rated file cabinets to meet our commitment. Attached is a typical fire survey which contains data on the type of building & amounts and types of combustibles. These data formed the basis for calculating total floor loads and % combustible material.

Also attached is a typical survey which identifies the results of reviewing each storage location against the nine ANSI 45.2.9 Section 5.6 considerations. These considerations contain guidance on the characteristics of the record storage facilities.

The areas surveyed included the following:

1. ✓ Turbine floor modules - IP central files.
2. ✓ Chemistry - Instrumentation & Control - IP ES Building.
3. Health Physics
 - ✓ A. Main Office
 - ✓ B. Supervisor's Office
 - ✓ C. Technician's Office
4. Maintenance - IP ES Building.
5. Quality Assurance & Reliability
 - A. 1901-S Irv. Pl
 - B. 615-S Irv. Pl
6. Station Administration - ES Building.
7. Receipt Inspection - IP.
8. Nuclear Training - IP Simulator Building.
9. Power Generation Maintenance - Van Nest. ✓
10. Nuclear Environmental monitoring - IP.
11. Construction - IP.

Part I: Evaluations Against NFPA No. 232.

Definitions

1. Non-fire resistive building - A building whose structural members, including floor and roof, cannot withstand a fire completely consuming combustible contents, trim & floor surfacing without collapse.
2. Fire resistive building - A building whose structural members (including floors and roof if used as part of vault) are of non-combustible material throughout and can withstand a fire completely consuming combustible contents, trim and floor surfacing on any floor without collapse, thereby assuring that record containers on one floor of the building will not be exposed to the burning of additional combustible material from other floors.
3. Facility - This is described by the perimeter of the record storage area.
4. Exposed combustibles - Materials that are in open shelves, cupboards or material in the building trim. The prefix 'C' in front of Item Descriptions denotes an exposed combustible.

Estimating The Combustible Material Exposure

The file cabinet's fire rating was determined by calculating the total weight of combustibles in the given record storage area. Combustible weight is calculated in terms of wood and paper. Where contents were other than wood and paper a 'Quality Factor' was used to make allowances for differences in heat values of other materials. When the 'Quality Factor' is multiplied by the combustible's weight an 'Equivalent weight' is generated. The 'total Weight' in a given area is then divided by the area to obtain the amount in pounds per square feet yielding the 'Load'. The 'Load' is assumed to be uniformly distributed. The resultant 'Load' was then compared with Table 5533 of NFPA No 232 to select cabinet rating.

Technique

I. Carpet: A characteristic sample of carpet used in storage area no.1 was obtained, measured and weighed. Being a composite of nylon pile foam-backed construction its weight was multiplied by a Quality factor of 2.

III. Flooring Type: Asphalt, Vinyl-Asphalt & Linoleum - Based on conversations with GAF. & Kentile Corporations, leading flooring manufacturers, it was decided to eliminate the class of material as exposed combustibles. This is further supported by Underwriters' Laboratories Inc reports USNC-42 which concluded that "sustained ignition was virtually nonexistent. (U.L. Ref: "A test method

III. Flooring Type (Cont'd)

for measuring the flame propagating characteristics of flooring and floor covering materials '-8/28/70 and draft report-' 'Test method for measuring the surface flame propagation characteristic of flooring and floor covering materials' - 6/73.")

In addition, a simple experiment was conducted to verify this position. A typical floor tile was placed on edge and a cigarette lighter placed under its corner. Although the tile did burn slowly once the flame was removed the tile immediately stopped burning. For this reason asphalt, vinyl and linoleum flooring were considered not to be 'exposed combustibles' just a combustible.

IV. Partitions - A characteristic wall sample was obtained for measuring and weighing for storage area No. 1 All other locations used estimates provided by NFPA No. 232.

1. Chairs

Foam padded chairs - The weight contribution was determined by taking dimensions of a typical office foam chair and calculating the volume occupied. Using an acceptable density value of 2.94 lb/ft³ the equivalent weight was calculated. Reference source: 'Plastic Foams' Part II by K. Frisch & J. Saunders - Marcel Decker Inc.

Wooden Chairs - A typical wooden Chair's weight was calculated₃ by estimating its volume of wood and then multiplying by 36 lb/ft³ wood's density as per NFPA No. 232.

2. Desks

Standard desk - The occupied volume of a typical desk was determined and multiplied by the computed standard density of paper. It was assumed that all drawers are fully packed with paper.

Wooden desks - Dimensions of all portions of the desk were taken thus generating volumes which could be converted into weight. Weight contribution of paper was also taken into consideration.

3. Drawings

Loose - The occupied volume of a drawing rack was calculated and converted into weight by multiplying it by the standard density of paper. It was assumed to be loosely packed to 20%.

Rolls - An average drawing package of engineering drawings was assumed to be four inches in diameter and weigh 5½ lbs.

4. File Cabinets - A representative sample of each size cabinet was selected and measured. Once its volume was known its weight was determined.

5. Flammable Liquids - Samples were taken and weighed then multiplied by a Quality Factor of 2.

6. Loose Paper - The density of office paper was empirically determined by weighing a representative sample ($\frac{1}{2}$ ream of xerox paper) and taking its dimensions to determine its volume. The value calculated is used throughout this report as the standard density of paper.

7. Storage Cabinets

Each type cabinet was measured to calculate its volume, and hence its weight.

8. Wooden Tables - Each table's component parts were measured, their volumes calculated and converted into weight using the density of wood. Weight contribution of paper was also included.

Designation of Record Storage Facilities

1. Central Files: - Since the turbine module is a non-fire resistive structure internally located inside IPl turbine bldg, the entire 53rd foot elevation of the turbine bldg (IPl & 2) as well as, the superheater bldg elev 53; outlined the facility. Health Physics - Supervisor's Office contents are also included in the calculations since they share the same facility.
2. Chemistry - Instrumentation & Control: Both record storage areas are adjacent to one another and are separated by non-fire resistive walls. The entire area and contents including Chemistry, I & C and Performance Engineering were included.
3. Health Physics A Main Office - The Storage facility is designated by the dimensions of the office.
B Supervisor's Office - See Item #1.
C Technician's Office - See Item 3A.
4. Maintenance - The storage facility is designated by the four walls of the office plus an additional area (telephone room) since it is separated by a non-fire resistive partition.
5. Quality Assurance and Reliability
 - A. Standards & Reliability 1901-S: The storage facility was taken to be the entire office since the immediate area is protected by 2 non-fire resistive walls.
 - o Books & paper stored in glass enclosed cabinets were not considered to be 'exposed combustibles'.
 - o The total value of apparent loose material was reduced by 40% since in actuality these items are 8½ x 11" while the value used elsewhere was calculated on the basis of 12" x 12" paper-books.
 - B. Quality Assurance 615-S: The facility was taken to be the south side of the building since the immediate storage area is boarded by two non-fire resistive partitions. The survey included General Accounting, Stores and Property Records, as well as QA.
6. Station Administration - The facility is marked off by the dimensions of the office including Gen'l Supt, Supt. conference room and xerox room.
7. Receipt Inspection - The storage facility is outlined by four concrete block walls; one wall has a motorized steel gate. This area is part of a larger structure.

8. Nuclear Training - The facility is the storage room itself.
9. PGM-QA - See response to item #3A.
10. Nuclear Environmental Monitoring - The storage facility is the entire structure.
11. Construction - Same as item #10.

RECORD STORAGE AREA SUMMARY SHEET

LOCATION & DEPARTMENT	LOAD (lb/ft ²)	EXPOSED COMBUS- TIBLES %	CABINET RATING	
			W/O IMPACT ^(hr)	W IMPACT
1. TURBINE FLOOR MODULES - NPG	1.5	29.5	1	
2. CHEMISTRY - I & C -	30.0	14.0		1
3. HEALTH PHYSICS				
A. MAIN OFFICE	20.5	27.0		1
B. SUPERVISORS' OFFICE	1.5	29.5 ^{*1}		1
C. TECHNICIANS' OFFICE	18.5	23.0 ^{*1}		1
4. MAINTENANCE	14.5	12.0		1
5. QUALITY ASSURANCE & RELIABILITY				
A. 1901-S	14.0	27.0		1
B. 615-S	17.0	27.5		1
6. STATION ADMINISTRATION	17.0	27.0		1
7. RECEIPT INSPECTION	8.0	79.5 ^{*2}		1
8. NUCLEAR TRAINING	1.0	0	1	
9. POWER GENERATION MAINTENANCE	23.5	8.5		1
10. NUCLEAR ENVIRONMENTAL MONITORING	10.0	12.5	1	

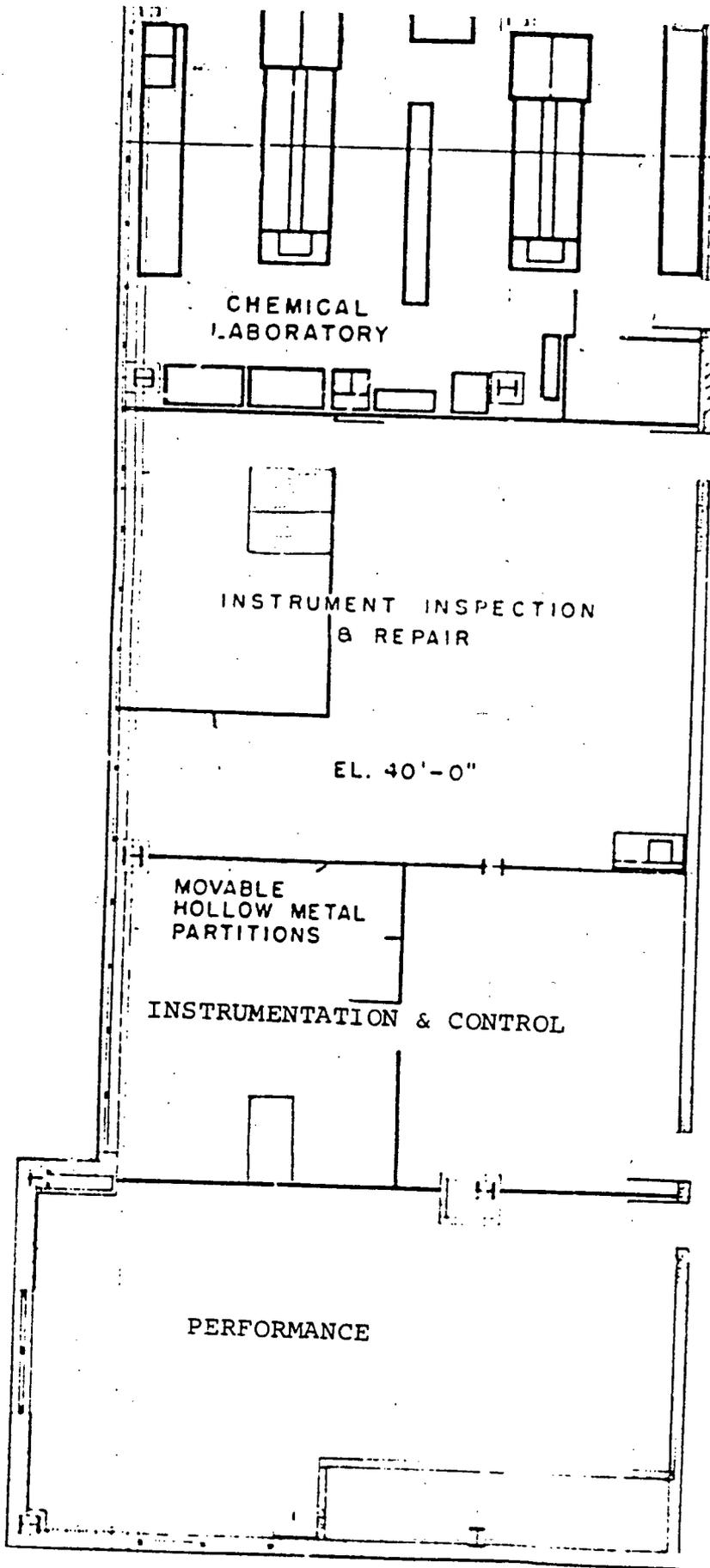
11. CONSTRUCTION - Construction does not store ANSI N45.2.9 records. They retain active files of working documents that are designated records at turnover to NPG. However one-hour fire rated cabinets will be provided for added protection. NFPA Class 1 does not apply.

*₁ Note Perdiscussion with S. Wisla 1/18/78, loose materials such as boxes will be removed expeditiously. This % combustible is based on loose material being removed.

*₂ Note Although exposed combustibles exceed 30%, one hour cabinets are suitable because this location is essentially equivalent to a two story non-fire resistant building without a basement.

A TYPICAL RECORD STORAGE AREA FLOOR PLAN

RECORD STORAGE AREA NO. 2
INDIAN POINT STATION
ELEV. 40' ENG. SERVICE BLDG.
CHEMISTRY & I. & C.



TYPICAL FIRE SURVEY

RECORD STORAGE AREA NUMBER 2

LOCATION: Indian Point Station
Engineering Services Building EL. 40

DEPARTMENT: Chemistry and Instrumentation and Control

DESCRIPTION:

I Fire Rating

Building : Fire Resistive Non-Fire Resistive
Storage Area : Fire Resistive Non-Fire Resistive

II Dimensions

	Dimensions	Area
Chemistry 1.	L - 34' X W - 25'	850ft ²
I & C 2.	L - 34' X W - 19'	646Ft ²
I & C 3.	L - 34' X W - 29'	986Ft ²
Performance 4.	L - 40' X W - 16'	640Ft ²
Performance 5.	L - 18' X W - 5'	90Ft ²
TOTAL AREA		3212Ft ²

III Flooring Type *Asphalt *Vinyl Linoleum
Carpet *Concrete Wood

*See Note 3

Equivalent Weight 8923.4 lbs.

IV Partitions

Type Single (Avg. Wt. Per Sq. Ft. 3lb)
Single W Studding (Avg. Wt. Per Sq. Ft. 5lb)
Double W Studding (Avg. Wt. Per Sq. Ft. 8lb)
Wood Panelled 3/8" Other Steel

Dimensions	Area	Weights
L - 6.5'	X W 5.17'	33.61ft ²
L - 14.58'	X W 5.17'	75.38ft ²
L - 8.75'	X W 5.17'	45.24ft ²
L -	X W	
L -	X W	
L -	X W	
L -	X W	

TOTAL WEIGHT 1233.8 lbs.

ADDITIONAL INFORMATION Con Edison Drawing 138002-2.

ITEM DESCRIPTION	QUANTITY	UNIT WEIGHT (In pounds unless otherwise noted)	WEIGHT (pounds)
C 1. CHAIRS FOAM PADDED WOODEN	30 0	2.94 35.00	88.2 0
2. DESKS STANDARD WOODEN	28 0 0	337.06 471.34 1146.96	9,437.7 0 0
C 3. DRAWINGS LOOSE @ 20% Compact ROLLS	0 20	9.6 lb/ft ³ 5.50	0 110
4. FILE CABINETS 5 DRAWER 4 DRAWER 4 DRAWER (Wide) 3 DRAWER 2 DRAWER	27 5 0 2 6	563.70 528.39 676.45 396.29 264.20	15,246.9 2,641.95 0 792.58 1,849.4
C 5. FLAMMABLE LIQUIDS	80 0	3.25 lb/qt 3.42 lb/liter	260 0
C 6. LOOSE PAPER	247.5'	48.387	11,975.78
7. STORAGE CABINETS (Dimensions in Ft)			
L - 1 x W - 3x H - 6		870.97	
L - 8 x W - 1x H - 6		2322.58	
L - 1.5 x W - 2x H - 2		290.32	
L - 1.5 x W - 2x H - 5		725.81	
L - 3 x W - 6x H - 1.5		1306.45	
L - 2 x W - 2x H - 3		580.64	
L - 1 x W - 2x H - 4		774.19	
L - 3 x W - 2x H - 6	4	1741.92	6,967.72
L - 7 x W - 3x H - 2	5	2032.25	10,161.25
L - 3 x W - 1.5x H - 7	9	1524.19	13,717.71
L - 6.5 x W - 2x H - 1.7	1	1069.35	1,069.35
L - 3 x W - 2x H - 6.5	3	1887.09	5,661.27
L - 9.25 x W - 1.58x H - 6	0	4243.06	0
L - 6 x W - 2x H - 2	1	1161.29	1,161.29
L - 7 x W - 4x H - 2	2	2709.67	5,419.34

ANSI N45.2.9 - 5.6 FACILITY CONSTRUCTION FEATURES

ITEM NUMBER	MEETS CONSIDERATION	ALTERNATE
1. Reinforced concrete, concrete block, masonry or equal construction.	-	Building of concrete & steel construction. There are windows on West side of room; a sufficient distance from records which are protected.
2. Concrete floor and roof with sufficient slope for drainage; if a floor drain is provided. A check valve or equal shall be included.	Yes	
3. Structure, doors, frames and hardware should be class A fire rated with a recommended four hour min rating.	N/A	This requirement is not applicable because the R.G. identifies NFPA Class 1 as an alternate.
4. Sealant applied over walls as a moisture or condensation barrier.	Yes	Glazed masonry wall tiles.
5. Surface sealant on floor providing a hard-wear surface to minimize concrete dusting.	Yes	
6. Foundation sealant and provision for drainage.	N/A	This storage area is at the 15' elevation.
7. Forced-Air circulation with filter system.	-	Forced air, no filtering. However, filtering is not necessary since records are protected in closed containers.

ANSI N45.2.9 CONSTRUCTION CONSIDERATIONS

ITEM NUMBER	MEETS CONSIDERATION	ALTERNATE
8. Adequate fire protection system.	Yes	Fire extinguishers present.
9. No pipes other than those providing fire protection to the storage facility are to be located within the facility.	Yes	

CONCLUSIONS

Fire Survey

Based on the results of this survey 1 hr rated fire cabinets with impact will provide sufficient protection against fire in all locations, per NFPA 232.

Nine Considerations

All record storage facilities which house these cabinets have been reviewed against N45.2.9 Section 5.6 - Considerations. The results of this review indicate that the nine considerations of Section 5.6 have been suitably addressed in all record storage locations. Particular characteristics of the record storage locations compensate for the more stringent guidance of the nine considerations where required. Details of this review are on file.

Docket files

TECHNICAL ASSIGNMENT CONTROL FORM

1 17 71 511

NEW ASSIGNMENT

NEW INFORMATION

* REQUIRED ENTRIES

SECTION I. REQUEST DATA

PREPARED BY: <i>T. Wambach A Schwencer</i>			(AD) DATE PREPARED * <i>6 7 1 13 78</i>	MO. DAY YR.
(AE/AF) TITLE/GENERAL DESCRIPTION (Limit to 120 characters) * <i>Amendments to Appendix B Tech specs</i>			(AZ) NRR CONTROL NUMBER * <i>4 2</i>	
(AG) REQUEST CONTACT * <i>Wambach</i>	(AX) REQUESTER'S INITIALS <i>TW</i>	(AB) REQUESTING ORGANIZATION * <i>ORB-1</i>	(AH) REQUESTING TARGET DATE <i>08 13 78</i>	MO. DAY YR.
(AJ/AK) REQUESTING REMARKS (Limit to 120 characters)			(AL) GENERIC NUMBER	(AM) MILESTONE
			(AM) STANDARDS TASK NUMBER	

SYSTEMS CONTROL DATA

FACILITY NAME(S)	(BA) DOCKET(S)	FACILITY NAME(S)	(BA) DOCKET(S)
(1) <i>Indian Point 1</i>	<i>050-0003</i>	(4)	<i>050-00</i>
(2) <i>Indian Point 2</i>	<i>050-00247</i>	(5)	<i>050-00</i>
(3) <i>Indian Point 3</i>	<i>050-00286</i>	(6)	<i>0</i>

VENDOR'S NAME			REPORT IDENTIFICATION SYMBOL		
			(DA) PROPRIETARY (P)		
(AR) REPORT DATE:	MO. DAY YR.	(AS) ADDITIONAL INFORMATION REQUEST DATE:	MO. DAY YR.	(EA) NON-PROPRIETARY VERSION (NP)	
(AT) SUBMIT DATE:	MO. DAY YR.	(AU) LETTER TO VENDOR DATE:	MO. DAY YR.	(FA) NON-PROPRIETARY REPORT	
			(AV) ACCEPTED <input type="checkbox"/> NOT ACCEPTED <input type="checkbox"/> WITHDRAWN <input type="checkbox"/> HOLD <input type="checkbox"/>		

SECTION II. REVIEW DATA

PREPARED BY:			DATE PREPARED	MO. DAY YR.
(AC) ACTIVITY CODE (Enter an "R" for Safety Related, an "E" for Environment Related or a "4" for Antitrust Related) * (JNK & JOM Only Need a Check Mark)				
POST CP (18)	PLANT SURVEILLANCE (36)	CONTRACT MGMT. (52)	REG. GUIDES & STD. REV. (71)	
ORDERS & APPROVALS (31)	GENERIC ISSUE IMPL. (41)	NON-REACTOR REV. (53)	INDUSTRY CODES & STD. (73)	
LIC. AMEND. & T.S. (33)	<input checked="" type="checkbox"/> NON-ROUTINE RESPONSE (42)	RESEARCH ACTIVITIES (54)	CORRESPONDENCE (JNK)	
OPERATOR LICENSING (34)	SYSTEM EVAL. PROGRAM (43)	GENERIC (A, B, C, D) (57)	ADMINISTRATIVE (JOM)	
POST OL HEARING (35)	TOPICAL REPORT REV. (51)	OTHER GENERIC (58)		

ASSIGNED ORGANIZATION ("X" appropriate column)

DOR	STSG	ADSG	MTEB	ADPS	ADET	ADSA	HMB	LWR2	FIN
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ORB1	<input checked="" type="checkbox"/> EB	RSLB	ADRS	CSB	ESB	ETSB	PSUB	LWR4	OLB
ORB2	EEB	DSS	AB	ICB	ADEP	RAB	DPM	ADSP	QAB
ORB3	PSB	ADE	CPB	PS	EPB1	ADST	ADLR	LMFB	
ORB4	RS	MEB	RSB	DSEA	EPB2	GSB	LWR1	ADQA	

REVIEWER'S SURNAME	(CA) REVIEWER'S INITIALS *	(CB) ESTIMATED HOURS	COMPLETION DATE		BRANCH COORDINATING LEAD RESPONSE
			(CC) ESTIMATED	(CD) ACTUAL	
LEAD REVIEWER			MO. DAY YR.	MO. DAY YR.	RESPOND INDIVIDUALLY <input type="checkbox"/>
<i>T.V. Wambach</i>	<i>T.V.W</i>				
<i>E.K. Moyers</i>	<i>E.K.M</i>				

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