California Automatic Fire Alarm Association, Inc.

TEL: (888) 607-5959

www.cafaa.com

**CALIFORNIA AUTOMATIC FIRE ALARM ASSOCIATION, INC. BOARD MEETING MINUTES**

LOCATION:
**General Meeting**
**December 7, 2023**
**The Fremont Hotel**
**950 Mason St, San Francisco, CA 94108**

**Call to Order**:
- Joel Reitz called the meeting to order at 8:30 AM

**Pledge of Allegiance**: Joel Reitz

**Verify Quorum**:
- Members for a quorum were present.

**Self Introductions**: Members and Guests

The following officers and board members of the association were in attendance:

| | | |
|---|---|---|
| a. | President | Joel Reitz |
| b. | VP North | Daniel Tate |
| c. | VP South | John Maitrejean |
| d. | Secretary | Joseph R. Cervantes, Sr. |
| e. | Treasurer | Frank Alvernaz |
| f. | Immediate Past President | Jay Levy |
| g. | Directors | Sean DeFriese, Kevin Green, Kirk Greenwood, Jon Kapis Curtis Streeter, John Bennett |
| h. | Officers Absent: | |
| i. | Board Members Not Present: Queen V.L. | |

**Members present**: See list attached in appendix.

**Electronic Board Action**

- Board reviewed new application process created by Past presidents to assist the Nominating Committee in new candidate searches.
- The board voted to approve the Referral Agreement from Jensen Hughes for the term of one year to host online training.
- The board voted on funding President's award for Joel Reitz.
- Board votes on liability insurance coverage for vendors at CAFAA sponsored events.
- The Board voted on the final contract for the Pechanga Resort and Casino for the 2026, 2027 and 2028 CAFAA Annual event.
- The Board voted to approve additional cost expenses for CAFAA Administrator assistance at the 2024 CAFAA Annual event.
- The Board voted to approve CFPI Silver sponsorship.

**Approval of Meeting minutes**:

- Joseph Cervantes submitted the meeting minutes for approval from the board for the September general meeting.
  **Motion to approve**: **1st – Kirk Greenwood 2nd- Curtis Streeter**
  **Approved unanimously**

**Treasurer's Report**: Frank Alvernaz

- Vote for $3,000 CAA Winter Conference
  **Motion for approval – 1st Jay Levy 2nd Joseph Cervantes**
- Discussion on Insurance policy general liability coverage that was added to cover the Association during our events.
  **Report Approved unanimously.**

**New Membership**: Joel Reitz

FPO:
David Lang (San Jose Fire Dept)
Eric Alvarez (Littlelake Fire Protection District)
Noorun Nahar (City of Stockton)
Patrick Chew (City of Sparks)
Scott Cunningham (Manteca Fire)
Sonya Bu (City of Menifee)

$10 Affiliate:
Aaron La Duke (Potter Electric Signal)
Aaron Peppers (PRIDE Industries)
Carl Peterson (RFI)
Jorge Chavez Jr (JCI)
Kyle Kelso (JCI)
Marty Benison (Pacific Signaling)

$325 members:
Christopher Cicero (Redwood City Alarm)
Russ Ellis (Eaton - voting member change)

$475 members:
Bob Luhrs (Pacific DAS)
Charisse Allen (DEA Security Systems Co. Inc)
**Motion to approve** – 1st Frank Alvernaz, 2nd Jay Levy
**Approved unanimously.**

TASK GROUPS & COMMITTEES

**Upcoming classes**

**Training**: Jon Kapis, Steven Lewis, Steve Schwartz, John Bennett

- A proposal was presented by JHA for re-establishing the offering of online training – No vote or decision has been submitted.
- With the changes at WBFAA, I was put in contact with Chris Moorhead who is behind the CMOOR group of training used by WBFAA and others. In the discussion with Chris, as documented in the 11/28 email, I had requested information on the type of service and curriculum being offered or could be offered by CMOOR. It was also reported that Chris and CMOOR would be present at the 12/7/23 meeting. As of today, I have not received

any additional information. I have personal opinions about this service offering that I will share at the meeting.

- Mr. Sullivan indicated that the committee, after deliberation, advises that CAFAA should look to hire outside entities. After discussion, it was agreed that the association will move forward with procuring quotes for these outside entities (Jensen Hughes, Fire Protection Engineering, NTC)

**CSFM Code Interpretations**: Kirk Greenwood

- No new Code Interpretations

**NFPA Report** – Kevin Green

- NFPA 72, 2025 edition; Second Revisions were open for ballot and were due on Monday, October 16, 2023, by 11:59pm (ET)

**CSFM/BML Report**: Ben Ho

- Changes to BML with personnel. Victor Wong and Damon Lam are changing roles, so it has created vacancies for the time being. Mr. Ho and Mr. David Castillo will be serving in the interim and are hiring 2 new engineers who will start on January 2nd.
- https://calfire.govmotus.org/ is now up and running for new CSFM Listing sheets.
- http://osfm.fire.ca.gov

**HCAI** – Joseph Cervantes

- No new updates for membership.
- https://hcai.ca.gov/

**DSA**: Sam Aviles

- DSA is working on updates to the FLS related publications. As always, it is recommended that members frequently check the DSA website for the most current publications; signing up to receive messages and advisories is also recommended.
- http://www.dsa.dgs.ca.gov

**SFPE**: Jay Levy – So Cal, Joseph Cervantes – San Diego, Daniel Tate – Nor Cal

SFPE So Cal - http://www.sfpesocal.org had their symposium. Topics covered were:

- P dufr#Sror#Iuh#
- ODGEV#Iuh#Sxp s#)#Wdqn#Lqvshfwlrqv#
- P dvv#Wlp ehu#
- Fdqdq#Djhqw#Dowuqdwlyhv#
- Wz r#Z d|#Frp p xqlfdwlrq#V|vwhp v#suhvhqwhg#e|#Mrvhsk#Fhuydqwhv#
- Z duhkrxvh#Dxwrp dwhg#Vwrudjh#dqg#Iuh#Fkdoohqjhv#

Nor Cal SFPE - http://www.ncnsfpe.org – No Updates

San Diego - http://sfpesandiego.org

- SFPE nominated an entirely new Board of Directors to move the chapter forward.

**So-Cal FPOs**: Joseph R. Cervantes

- Working on inspection checklist on all fire protection systems. Mr. Cervantes would like to see if any members are interested in joining a small discussion group to vet them out.
- So Cal Fire Alarm Devices Committee has 3 new code proposals that went to the Southern California Code Committee.

- So Cal FPO November general meeting was held at the Firehouse Museum, 1572 Columbia St, San Diego, CA 92101 on November 8th.
    - Elley Klausbruckner presented on High Piled Storage and updates to NFPA 13.
- The So Cal FPO Holiday Luncheon was held December 6th in Long Beach.
- http://www.firepreventionofficers.org/divisions/south

**Nor-Cal FPOs**: Joel Reitz

- The NorCal FPO's November Meeting was held in Hayward on November 17th.
- It was a joint meeting between NorCal FPO's and the NorCal/Nevada SFPE Chapter.
- Various Legislative and Code updates were provided along with an education session on high-rack storage by UL.
- Tim Spears, Fire Marshal, South San Joaquin County Fire Authority and NorCal 1st VP will be representing NorCal FPO's at our Annual Conference and a panelist for the Roundtable session.
- Rebecca Leda, NorCal FPO President and I discussed the possibility of the FPO's and CAFAA holding a Joint Meeting in 2024.
- The FPO's typically meet on the 4th Friday of every month, so we may need to adjust our Meeting Schedule from a Thursday to a Friday.
- Not sure if the April AHJ Roundtable Meeting will be a good target date or possibly the October Meeting/State Agency.
- There is no Meeting in December.
- Next Meeting is Friday, January 26th, 2024 in West Sacramento.

**CAFAA Codes and Standards Committee –** Joseph Cervantes, Steven Lewis

- Code committee shared synopsis of the group and reporting on new code updates that will be relevant to the membership.
- SIG TMS – Chapter 14, 2nd Draft final ballot sent back in October.
    - Next Edition: 2025
    - Revision Cycle: Annual 2024
    - First Draft Closing Date was June 1, 2022. Report was shared and posted March 9, 2023. Shared with CAFAA already.
    - Second Draft Closing Date was May 31, 2023. Report will be posted February 28, 2024. Ballot attached to share with CAFAA in the appendix.

**LAFD/CAFAA coordination meeting** – Kirk Greenwood, John Maitrejean

- 2023 LA City code adoptions currently in approval process with the City Council, and will be effective 30 days after Council approval. This will be published with ICC for reference on the website.
- Adaptive reuse ordinance is currently being revised, will be referencing the CEBC sections that were incorporated into CBC
- Currently there are 6 department guidelines and requirements in the process of being changed, including Two-Way Comm Systems, BDA/ERCES Systems, Fire Alarm Sequence of Ops, and Residential Solar Systems

- There is a new signature card for rough inspections to help ensure all required systems are accounted for during initial stages of a building construction, instead of finding out the construction team forgot systems such as Fire Alarm, ERCES, Two-Way Comm, etc.
- Next meeting scheduled for 12/26/2023

**Social Media –** Daniel Tate & Joseph Cervantes

- Social media committee displayed a new committee synopsis and agenda for the 2024 committee group to use as part of their agenda.
- Looking for new leadership to join the group and work on Social Media.

**Ethics Committee:** Jay Levy

- No new items to discuss.

**ERRCS Committee:** Jay Levy

- The ERCES committee had its last meeting of the year on 11/3/23.
- Regular topics include updates on NICET, UL, SBC, and current issues and trends we see in the industry.
- There's discussion on who and how to put together a training class for CAFAA to put on. Mike Brownson is now doing his own classes, we should consider hiring him to do the class on our behalf. Or we can do it and buy the SBC handbook at a discount.

**Bill Hopple Educational Scholarship –** John Maitrejean, Ivy Kiyomura, Daniel Tate, Frank Alvernaz

- Committee is currently updating the application for clarity for this upcoming year, and will be ready to launch at annual conference
- Website is updated showing this year's recipient, Shira Weiss-Ishai – who will be attending Columbia University this Fall.

**2024 Conference -** Ivy Kiyomura

- Recap plan for 2024 (and 2025) Conference with dual locations at Hilton Palm Springs & Palm Springs Convention Center
- Review of the 2024 Conference program & schedule
- Confirmed presenters and if any presenters still need to be found.
    - Need to confirm presenter for Intervening adoption CA fire code amendments for July 2024
    - AHJ Round table still needs a NorCal & SoCal, and AHJ panelist.
- CAFAA is in contract negotiations with a new venue for 2026+
- We will announce the new venue once the contract has been signed.

**2023 Membership** - Ivy Kiyomura, John Heath

- Haven't done much for membership, need assistance to do more.
- Looking for new leadership for committee to grow membership.

**By Law Review Committee-** Joseph Cervantes, Frank Alvernaz, Jay Levy

- Discussed and highlighted the changes and how to read them.
- Made some minor changes to the final version based on Board input.

  **Motion to approve** to move forward to the Voting Members for approval – 1st John Bennett , 2nd Curtis Streeter

  **Approved Unanimously**

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**Old Business – CFPI –** Kapis, Curtis, Sam Aviles volunteered to present.

- Insurance Program for Life Safety Industry – Kevin Green

**New Business & Sharing of Ideas**

**Board Slate was proposed by Jay Levy for Board vote to present to the membership.**

**Motion to approve – 1st Jon Kapis 2nd - Kevin Greene**

**CAFAA Administrator Position –**

- The role will be a paid position as a 1099 independent contractor.
- Reviewed the roles and responsibilities matrix that was provided.
- Greenwood and Joel Reitz.
- Budget for shadowing was up for discussion.
  - $10,000 was suggested and motioned for approval to cover expenses and salary.
  - **Motion for approval – 1st Joseph Cervantes, 2nd Jay Levy**
- Application review committee was established by Joel Reitz. The committee will be comprised of Kirk Greenwood, Ivy Kiyomura and Joel Reitz.

**Good of the Order**

**Next Meeting Schedule:**
**2/7/2024 – Presidents Reception**
**2/8/2024 – CAFAA Annual Conference**
**2/9/2024 – CAFAA General Meeting**
**The Hilton Hotel**
**400 E. Tahquitz Canyon Way**
**Palm Springs, Ca. 92262**

- Joel Reitz adjourned the meeting at 11:11 PM.

Respectfully submitted,

Joseph Cervantes, Sr.

Secretary, CAFAA Officer of The Board

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# APPENDIX/ ATTACHMENTS

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# Treasurer's Report

# California Automatic Fire Alarm Association

## Treasurers Report - 12/04/2023

| Cash and Assets | Amount |
|---|---|
| Wells Fargo (Checking) Online Balance | $70,217 |
| Wells Fargo (Savings) Online Balance | $165,262 |
| Uncollected Funds Owed to CAFAA | $20 |
| **Total Cash and Assets** | **$235,498** |

| Pending Liabilities | Pending |
|---|---|
| SLA Contract Services | $3,800 |
| Affinity Pay - Credit Card Charges and Refunds | $1,000 |
| Annual Misc. | $833 |
| Training Costs | $333 |
| CFPI Santa Barbara | $0 |
| Insurance | $0 |
| CAFAA Annual Conference | $0 |
| Tax Preparation | $1,800 |
| NorCal AHJ Q&A Roundtable | $0 |
| SoCal AHJ Q&A Roundtable | $0 |
| CAFAA State Agency Meeting | $0 |
| CAA Winter Conference | $3,500 |
| CAFAA Scholoarship | $0 |
| **Total Pending Liabilities** | **$11,267** |

| Assets Less Liabilities | Amount |
|---|---|
| Total Cash & Material Assets | $235,498 |
| Total Current Liabilities (Est.) | $11,267 |
| **Total Assets Less Liabilities** | **$224,232** |

California Automatic Fire Alarm Association
Check Log - 2023

December 4, 2023

| Check | Date | Amount | √ | Paid To | Paid For | Category | Total |
|---|---|---|---|---|---|---|---|
| Tres Card | 1/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Tres Card | 1/3/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 1/3/2023 | $ 33.94 | x | Access Line | Phone | Misc | $ 33.94 |
| Bill Pay | 1/3/2023 | $ 620.20 | x | WF Charge | Affintity Pay | Misc | $ 620.20 |
| Bill Pay | 1/4/2023 | $ 610.56 | x | WF Charge | Affintity Pay | Misc | $ 610.56 |
| Transfer | 1/20/2022 | $ 2,677.00 | x | Alarm Insurance Agency | D&O Insurance | Insurance | $ 2,677.00 |
| Transfer | 1/20/2022 | $ 1,678.00 | x | Alarm Insurance Agency | E&O Insurance | Insurance | $ 1,678.00 |
| Bill Pay | 1/18/2022 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Tres Card | 1/19/2023 | $ 110.83 | x | Fire Arts Awards | Awards for Annual Conf | Palm Springs | $ 110.83 |
| Tres Card | 1/27/2023 | $ 7,624.12 | x | Tahquitz Creek GC | Golf Annual Conf | Palm Springs | $ 7,624.12 |
| Tres Card | 1/28/2023 | $ 1,008.52 | x | Sharon Expenses | Expenses (Details below) | n/a | $ - |
| | | | x | UPS | UPS Shipping - Conf supplies | Palm Springs | $ 576.41 |
| | | | x | UPS | UPS Shipping - Conf supplies | Palm Springs | $ 179.05 |
| | | | x | Michaels | Card Stock | Palm Springs | $ 4.88 |
| | | | x | Shuttle | Airport Shuttle | Palm Springs | $ 194.18 |
| | | | x | UPS | UPS Shipping - Conf supplies | Palm Springs | $ 54.00 |
| Tres Card | 1/28/2023 | $ 1,000.00 | x | Attrium Hotel | Deposit to Reserve | SoCal AHJ | $ 1,000.00 |
| | | | | | | | |
| | | | | | | | |
| Tres Card | 2/1/2023 | $ 40.27 | x | Access Line | Phone | Misc | $ 40.27 |
| Tres Card | 2/2/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 2/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 2/6/2023 | $ 2,862.53 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 2,862.53 |
| Pres Card | 2/10/2023 | $ 666.54 | x | Hilton Hotel | Joels Rm for the Annual | Palm Springs | $ 666.54 |
| Pres Card | 2/14/2023 | $ 383.11 | x | Costco | CFPI Raffle Prize | CFPI | $ 383.11 |
| Pres Card | 2/16/2023 | $ 393.27 | x | Santa Barbara Fish Co. | CFPI Dinner | CFPI | $ 393.27 |
| 4264 | 2/17/2023 | $ 2,607.38 | x | Sharon Expenses | Expense details (below) | n/a | |
| | | | x | Daiso | Plastic contners, bins, rubber bands | Palm Springs | $ 25.08 |
| | | | x | Costco | TV raffle | Palm Springs | $ 1,133.25 |
| | | | x | Walmart | Printer paper, poster board, napkins | Palm Springs | $ 67.27 |
| | | | x | Canyon Print & Signs | Posters for use as signage | Palm Springs | $ 117.99 |
| | | | x | Swiss Donuts | Donuts for golfers | Palm Springs | $ 78.95 |
| | | | x | Smart & Final | Golfer treat bags, 2 x $50 GC | Palm Springs | $ 199.95 |
| | | | x | Staples | Ink, sticker badges | Palm Springs | $ 84.09 |
| | | | x | Staples | Printer paper | Palm Springs | $ 11.46 |
| | | | x | Staples | Epson printer, envelopes, badges | Palm Springs | $ 398.46 |
| | | | x | Target | GC's for raffle | Palm Springs | $ 462.00 |
| | | | x | Staples | Paperclips | Palm Springs | $ 22.89 |
| | | | x | Ralphs | Envelops for golf | Palm Springs | $ 5.99 |
| 4263 | 2/17/2023 | $ 1,999.62 | x | Sharon Expenses | Expense details (below) | n/a | |
| | | | x | Hilton Hotel | Sharon's Rm for the Annual | Palm Springs | $ 666.54 |
| | | | x | Hilton Hotel | Laurie Dwonch Rm for the Annual | Palm Springs | $ 666.54 |
| | | | x | Hilton Hotel | Nina Akahoshi Rm for the Annual | Palm Springs | $ 666.54 |
| 4265 | 2/17/2023 | $ 1,325.00 | x | Tina Stuebgen Photography | Annual Golf Pictures | Palm Springs | $ 1,325.00 |
| 4266 | 2/17/2023 | $ 1,198.00 | x | SLA | Conference consulting services | Palm Springs | $ 1,198.00 |
| 4267 | 2/24/2023 | $ 168.00 | x | Fairway Recognition | Golf tee signs | Palm Springs | $ 168.00 |
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| 4271 | 3/2/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| 4270 | 3/2/2023 | $ 1,953.58 | x | Sharon Expenses | Expense details (below) | n/a | |
| | | | x | Smart & Final | Bags for treat bags | Palm Springs | $ 17.30 |
| | | | x | UPS | Shipping for handout pkgs & easels | Palm Springs | $ 179.05 |
| | | | x | Staples | 1099NEC packet & envelopes | Misc | $ 54.00 |
| | | | x | Adam Tax | e-filing of 1099NEC | Misc | $ 3.00 |
| | | | x | Cash Tips | Airport shuttle drivers, ship clerk | Palm Springs | $ 45.00 |
| | | | x | Smart & Final | Bags for treat bags | Palm Springs | $ 14.73 |
| | | | x | Various | Travel Meals | Palm Springs | $ 213.24 |
| | | | x | Various | Travel Meals | Palm Springs | $ 135.01 |
| | | | x | Various | Travel Meals | Palm Springs | $ 155.84 |
| | | | x | Various | Travel Meals | Palm Springs | $ 196.00 |
| | | | x | Various | Travel Meals | Palm Springs | $ 28.68 |
| | | | x | Alamo | Rental car | Palm Springs | $ 749.86 |
| | | | x | UPS | Shipping | Palm Springs | $ 161.87 |
| 4268 | 3/2/2023 | $ 1,261.40 | x | Sharon Expenses | Expense details (below) | n/a | |
| | | | x | JW Marriott | Spa for Sharon, Nina, Laurie | Palm Springs | $ 866.40 |
| | | | x | Amalfi | Dinner for Sharon, Nina, Laurie | Palm Springs | $ 395.00 |
| 4269 | 3/2/2023 | $ 528.50 | x | Sharon Expenses | Expense details (below) | n/a | |
| | | | x | USPS | Postage for pins | Misc | $ 9.70 |

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Check Log - 2023

December 4, 2023

| Check | Date | Amount | √ | Paid To | Paid For | Category | Total |
|---|---|---|---|---|---|---|---|
| | | | x | USPS | Stamps to mail pins | Misc | $ 226.50 |
| | | | x | USPS | Pin postage | Misc | $ 91.85 |
| | | | x | USPS | Pin postage | Misc | $ 62.35 |
| | | | x | USPS | Pin postage | Misc | $ 68.10 |
| | | | x | United Airlines | Baggage Fees | Palm Springs | $ 70.00 |
| Tres Card | 3/3/2023 | $ 148.01 | x | All My Best | Board member shirts | Misc | $ 148.01 |
| Tres Card | 3/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 3/6/2023 | $ 330.88 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 330.88 |
| 4272 | 3/8/2023 | $ 102,098.54 | x | Hilton | Hilton Invoice | Palm Springs | $ 102,098.54 |
| Tres Card | 3/10/2023 | $ 299.86 | | Network Solutions | Domain renewal- 5 yrs | Misc | $ 299.86 |
| Tres Card | 3/13/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Bill Pay | 3/13/2023 | $ 25.00 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 25.00 |
| Bill Pay | 3/13/2023 | $ 10.00 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 10.00 |
| Bill Pay | 3/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Tres Card | 3/15/2023 | $ 31.01 | x | Access Line | Phone | Misc | $ 31.01 |
| Tres Card | 3/16/2023 | $ 12.87 | x | All My Best | Shipping charges for board member shirts | Misc | $ 12.87 |
| Tres Card | 3/30/2023 | $ 277.96 | x | Southwest Airlines | SoCal AHJ Meeting, Sharon flight | | $ 277.96 |
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| Tres Card | 4/3/2023 | $ 27.48 | x | Access Line | Phone | Misc | $ 27.48 |
| Tres Card | 4/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 4/4/2023 | $ 91.72 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 91.72 |
| Tres Card | 4/5/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 4/12/2023 | $ 221.60 | x | Crown Awards | Gifts for panel | NorCal | $ 221.60 |
| Tres Card | 4/12/2023 | $ 41.88 | x | Crown Awards | Gifts for panel | NorCal | $ 41.88 |
| Bill Pay | 4/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Bill Pay | 4/14/2023 | $ 134.58 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 134.58 |
| Bill Pay | 4/20/2023 | $ 51.39 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 51.39 |
| Bill Pay | 4/20/2023 | $ 2.45 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 2.45 |
| Bill Pay | 4/20/2023 | $ 51.56 | x | Interest Payment | Interest Payment | | $ 51.56 |
| Tres Card | 4/21/2023 | $ 13.17 | x | Crown Awards | Gifts for panel | Gifts for panel | $ 13.17 |
| Tres Card | 4/24/2023 | $ 3.34 | x | Crown Awards | Gifts for panel | Gifts for panel | $ 3.34 |
| Bill Pay | 4/24/2023 | $ 51.03 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affinity Pay | $ 51.03 |
| Bill Pay | 4/28/2023 | $ 10,000.00 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affinity Pay | $ 10,000.00 |
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| Tres Card | 5/1/2023 | $ 25.82 | x | Crown Awards | Gifts for panel | NorCal | $ 25.82 |
| Tres Card | 5/1/2023 | $ 200.00 | x | Palm Springs Conv Center | Insurance Deposit | NorCal | $ 200.00 |
| Tres Card | 5/1/2023 | $ 3,755.83 | x | Doubletree Hotel | NorCal AHJ Meeting | NorCal | $ 3,755.83 |
| Bill Pay | 5/3/2023 | $ 16.00 | x | Affinity Pay | Affinity Pay Refunds & Fees | Affinity Pay | $ 16.00 |
| Tres Card | 5/4/2023 | $ 162.60 | x | Doubletree Hotel | NorCal AHJ Meeting | NorCal | $ 162.60 |
| Tres Card | 5/5/2023 | $ 30.00 | x | Crown Awards | Gifts for panel | NorCal | $ 30.00 |
| Bill Pay | 5/9/2023 | $ 78.57 | x | Kirk Greenwood Expenses | Expense Detail (below) | | |
| | | | x | Westin Rancho Mirage | Meals & Parking for site survey | Site Survey | $ 78.57 |
| Bill Pay | 5/9/2023 | $ 151.96 | x | Joel Reitz Expenses | Expense Detail (below) | | |
| | | | x | Southwest Airlines | Flight for site visits | Site Survey | $ 151.96 |
| Bill Pay | 5/9/2023 | $ 319.24 | x | Sharon Expenses | Expense Detail (below) | NorCal | |
| | | | x | Target | Gift Cards for NorCal AHJ Meeting | NorCal | $ 169.24 |
| | | | x | | Cell phone $25/month Nov '22-Apr, '23 (6 months) | Misc | $ 150.00 |
| Bill Pay | 5/16/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Pres Card | 5/24/2023 | $ 34.98 | x | Pechanga- Blends | Travel meals | Site Survey | $ 34.98 |
| Pres Card | 5/24/2023 | $ 61.99 | x | Ruben & Ozzy's | Travel meals | Site Survey | $ 61.99 |
| Pres Card | 5/24/2023 | $ 29.72 | x | Ramon Gas | Gas Car Rental | Site Survey | $ 29.72 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Tres Card | 6/1/2023 | $ 234.76 | x | Crown Awards | Gifts for panel | SoCal | $ 234.76 |
| Tres Card | 6/1/2023 | $ 26.16 | x | Access Line | Phone | Misc | $ 26.16 |
| Tres Card | 6/1/2023 | $ 62.75 | x | Blue Wave Printing | Big Check for Scholarship winner | Misc | $ 62.75 |
| Bill Pay | 6/1/2023 | $ 695.12 | x | Sharon Expenses | Expense Detail (below) | | |
| | | | x | Southwest Airlines | Flight for site visits | Site Survey | $ 151.96 |
| | | | x | Alamo | Rental Car for site visits | Site Survey | $ 322.28 |
| | | | x | Microsoft | Microsoft 365 Renewal | Misc | $ 99.00 |
| | | | x | Oakland Airport | Airport Parking | Site Survey | $ 38.00 |
| | | | x | See's Candy | Gifts for site visits | site Survey | $ 37.60 |
| | | | x | Staples | Supplies | misc | $ 46.28 |
| Tres Card | 6/2/2023 | $ 69.39 | x | Blue Wave Printing | Big Check for Scholarship winner | misc | $ 69.39 |
| Tres Card | 6/5/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Tres Card | 6/5/2023 | $ 212.76 | x | Banner Buzz | Conference Banners | Palm Springs | $ 212.76 |

California Automatic Fire Alarm Association
Check Log - 2023

December 4, 2023

| Check | Date | Amount | √ | Paid To | Paid For | Category | Total |
|---|---|---|---|---|---|---|---|
| Tres Card | 6/5/2023 | $ 61.48 | x | Amazon | Name Badges for SoCal AHJ Meeting | SoCal | $ 61.48 |
| Bill Pay | 6/5/2023 | $ 101.63 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 101.63 |
| Tres Card | 6/5/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 6/6/2023 | $ 76.92 | x | Francis & Dean | NFPA Conference Liability Insurance | NFPA | $ 76.92 |
| Tres Card | 6/9/2023 | $ 1,342.77 | x | Freeman | NFPA Conference Booth | NFPA | $ 1,342.77 |
| Bill Pay | 6/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Tres Card | 6/16/2023 | $ 10,000.00 | x | Attrium Hotel | So Cal AHJ Room & Food | SoCal | $ 10,000.00 |
| Tres Card | 6/20/2023 | $ 40.00 | x | Attrium Hotel | So Cal AHJ Room & Food | SoCal | $ 40.00 |
| Tres Card | 6/20/2023 | $ 2,104.67 | x | Attrium Hotel | So Cal AHJ Room & Food | SoCal | $ 2,104.67 |
| Tres Card | 6/20/2023 | $ 9.87 | x | Amazon | Supplies for printer & event | SoCal | $ 9.87 |
| Tres Card | 6/20/2023 | $ 601.97 | x | Amazon | Supplies for printer & event | SoCal | $ 601.97 |
| Tres Card | 6/20/2023 | $ 167.57 | x | Amazon | Supplies for printer & event | SoCal | $ 167.57 |
| Tres Card | 6/20/2023 | $ 321.21 | x | Amazon | Supplies for printer & event | SoCal | $ 321.21 |
| Tres Card | 6/26/2023 | $ 305.88 | | Network Solutions | Domain renewal- 5 yrs | Misc | $ 305.88 |
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| Tres Card | 7/1/2023 | $ 28.80 | x | Access Line | Phone | Misc | $ 28.80 |
| Tres Card | 7/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 7/5/2023 | $ 68.61 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 68.61 |
| Bill Pay | 7/5/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 7/12/2023 | $ 500.00 | x | Hannibals | Deposit | State Agency | $ 500.00 |
| Bill Pay | 7/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Bill Pay | 7/19/2023 | $ 1,355.79 | x | Sharon Expenses | Expense Detail (below) | | |
| | | | x | Walmart | Gift bags for thank you gifts | SoCal | $ 4.32 |
| | | | x | Safeway | Gift cards for Advanced Question raffle | SoCal | $ 150.00 |
| | | | x | Springhill Suites | Hotel for Sharon | SoCal | $ 621.04 |
| | | | x | Alamo | Rental car for Socal AHJ for Sharon | SoCal | $ 254.82 |
| | | | x | Costco | Gas for rental car | SoCal | $ 38.32 |
| | | | x | Oakland Airport | Airport parking | Socal | $ 63.09 |
| | | | x | Various | Travel Meals | Socal | $ 139.05 |
| | | | x | Target | Treats & supplies for Socal mtg | SoCal | $ 85.15 |
| Bill Pay | 7/24/2023 | $ 95.00 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 95.00 |
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| Tres Card | 8/1/2023 | $ 27.61 | x | Access Line | Phone | Misc | $ 27.61 |
| Tres Card | 8/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 8/7/2023 | $ 95.98 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 95.98 |
| Bill Pay | 8/7/2023 | $ 29.99 | x | Google Apps | Google Apps | Misc | $ 29.99 |
| Bill Pay | 8/15/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Bill Pay | 8/21/2023 | $ 3,000.00 | x | Shira Weiss-Ishai | CAFAA Scholarship Winner | Scholarship | $ 3,000.00 |
| Bill Pay | 8/31/2023 | $ 564.82 | x | Sharon Expenses | Expense Detail (below) | | |
| | | | | Southwest Airlines | Flight for Board Only meeting | Board Only | $ 207.97 |
| | | | | Oakland Airport | Prepaid parking | Board Only | $ 42.00 |
| | | | | Hilton | Hotel for Board Only Meeting | Board Only | $ 219.49 |
| | | | | Uber | Transportation to Board only meeting | Board Only | $ 72.23 |
| | | | | Staples | Supplies | Board Only | $ 12.12 |
| | | | | Costco | Paper for printouts | Board Only | $ 11.01 |
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| Bill Pay | 9/1/2023 | $ 28.19 | x | Access Line | Phone | Misc | $ 28.19 |
| Bill Pay | 9/5/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 9/5/2023 | $ 78.77 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 78.77 |
| Bill Pay | 9/5/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Bill Pay | 9/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Pres Card | 9/15/2023 | $ 32.12 | x | Walmart | Bottled Water | State Agency | $ 32.12 |
| Pres Card | 9/20/2023 | $ 300.00 | x | CVS | Gift cards for State Agency | State Agency | $ 300.00 |
| Pres Card | 9/20/2023 | $ 14.31 | x | Speedway | Ice for State Agency | State Agency | $ 14.31 |
| Credit | 9/21/2023 | $ (279.87) | | Network Solutions | Credit for overcharge (299.86 on 3/10/23) | Misc | $ (279.87) |
| Tres Card | 9/22/2023 | $ 388.33 | x | Panera Bread | Food for State Agency Meeting | State Agency | $ 388.33 |
| Pres Card | 9/22/2023 | $ 14.31 | x | Speedway | Ice for State Agency | State Agency | $ 14.31 |
| Tres Card | 9/22/2023 | $ 1,319.25 | x | Hannibals Catering | Food for State Agency Meeting | State Agency | $ 1,319.25 |
| Tres Card | 9/22/2023 | $ 900.00 | x | Survey Monkey | Renewal | Misc | $ 900.00 |
| Tres Card | 9/25/2023 | $ 228.51 | x | Panera Bread | Food for State Agency Meeting | State Agency | $ 228.51 |
| Tres Card | 9/27/2023 | $ 2,500.00 | x | Hunt Ortmann | Attorney for updating bylaws | Misc | $ 2,500.00 |
| Bill Pay | 9/27/2023 | $ 803.52 | x | Sharon Expenses | | Misc | |
| | | | x | Costco | Treat bag items | State Agency | $ 232.24 |
| | | | x | Target | Gift cards for State Ageny Raffle | State Agency | $ 161.60 |
| | | | x | Mileage | Mileage for travel to/from HCAI | State Agency | $ 141.28 |
| | | | x | Sprinhill Suites | Hotel | State Agency | $ 268.40 |

**California Automatic Fire Alarm Association**
**Check Log - 2023**

**December 4, 2023**

| Check | Date | Amount | √ | Paid To | Paid For | Category | Total |
|---|---|---|---|---|---|---|---|
| Tres Card | 9/29/2023 | $ 204.59 | x | Fine Awards | Art Kane Award | Misc | $ 204.59 |
| | | | | | | | |
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| Bill Pay | 10/2/2023 | $ 27.52 | x | Access Line | Phone | Misc | $ 27.52 |
| Bill Pay | 10/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Tres Card | 10/5/2023 | $ 861.02 | x | My Custom Golf Bag | President Gift | Misc | $ 861.02 |
| Bill Pay | 10/5/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Bill Pay | 10/6/2023 | $ 64.83 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 64.83 |
| Bill Pay | 10/16/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Tres Card | 10/26/2023 | $ 2,443.00 | x | Eclipse Marketing | General Liability Insurance | Misc | $ 2,443.00 |
| Tres Card | 10/26/2023 | $ 79.40 | x | Eclipse Marketing | General Liability Insurance Service Fee | Misc | $ 79.40 |
| Pres Card | 10/30/2023 | $ 222.18 | x | Hilton | Room reservation for Pres | Annual | $ 222.18 |
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| | | | | | | | |
| Bill Pay | 11/1/2023 | $ 27.01 | x | Access Line | Phone | Misc | $ 27.52 |
| Tres Card | 11/2/2023 | $ 661.49 | x | Amazon | New Printer | Misc | $ 661.49 |
| Bill Pay | 11/3/2023 | $ 16.00 | x | Mad Mimi | Email Services | Misc | $ 16.00 |
| Bill Pay | 11/6/2023 | $ 518.31 | x | Affintity Pay | Affintity Pay Refunds & Fees | Affintity Pay | $ 518.31 |
| Bill Pay | 11/6/2023 | $ 30.00 | x | Google Apps | Google Apps | Misc | $ 30.00 |
| Tres Card | 11/8/2023 | $ 251.96 | x | Southwest | Sharon Flight for Annual | Annual | $ 251.96 |
| Tres Card | 11/8/2023 | $ 251.96 | x | Southwest | Sharon Assistant Flight for Annual | Annual | $ 251.96 |
| Tres Card | 11/8/2023 | $ 251.96 | x | Southwest | Sharon Assistant Flight for Annual | Annual | $ 251.96 |
| Tres Card | 11/8/2023 | $ 267.81 | x | United | Sharon Assistant Flight for Annual | Annual | $ 267.81 |
| Bill Pay | 11/14/2023 | $ 125.67 | x | Sharon Expenses | | Misc | |
| | | | x | USPS | Postage to mail membership certs & pins | Misc | $ 71.00 |
| | | | x | Staples | Envelopes to mail membership certs & pins | Misc | $ 54.67 |
| Bill Pay | 11/14/2023 | $ 3,800.00 | x | SLA | Contract services | Contract services | $ 3,800.00 |
| Tres Card | 11/15/2023 | $ 6,000.00 | x | Pechanga | Deposit for 2026 Conference | Annual | $ 6,000.00 |
| Tres Card | 11/16/2023 | $ 388.00 | x | USPS | PO Box Renewal | Misc | $ 388.00 |
| Tres Card | 11/20/2023 | $ 729.41 | x | Yeti | Annual Conference Speaker Gifts (x11) | Annual | $ 729.41 |
| | | | | | | | |
| | | | | | | | |
| **Annual Spend** | | **$233,676.48** | | | | | **$ 233,677.00** |

California Automatic Fire Alarm Association, Inc.

TEL: (888) 607-5959

www.cafaa.com

# Codes and Standards Committee Outline

# CAFAA Code Committee

**Mission Statement:**

The CAFAA Code Committee is dedicated to representing the interests of the California Automatic Fire Alarm Association's membership by actively participating in the development and revision of national codes and regulations related to fire alarm  and signaling systems. We strive to ensure that these codes align with industry best practices and promote the highest standards of fire safety.

**Committee Purpose:**

Code Advocacy: Advocate for CAFAA's members by actively participating in the development and revision of national fire alarm codes and regulations, including but not limited to NFPA 72 (National Fire Alarm and Signaling Code) and other relevant standards.

**Education and Awareness:** Disseminate information about changes in national codes and regulations to CAFAA members to keep them informed and compliant.

**Collaboration:** Foster collaboration and communication between CAFAA, its members, and relevant national organizations such as NFPA (National Fire Protection Association) to address industry concerns and promote fire safety.

**Industry Expertise:** Serve as a knowledge hub for members seeking guidance on interpreting and implementing national fire alarm codes and regulations.

**Committee Structure:**

**1. Chairperson: Northern California and Southern California**

- Responsible for leading and coordinating the committee's activities.
- Serves as the primary point of contact between the all committees served by the Association and the CAFAA board/Membership.

**2. Committee Members:**

- Composed of CAFAA members with expertise in fire alarm systems and familiarity with national codes and regulations.
- Actively participate in code development discussions, research, and advocacy efforts.

**3. Subcommittee(s):**

- Depending on the scope of work, subcommittees may be formed to focus on specific code-related topics or standards (e.g., NFPA 72).
- Subcommittee members are appointed by the Chairperson and may include non-committee CAFAA members with relevant expertise.

**Committee Responsibilities**:

**Review and Analysis:** Regularly review proposed changes to national codes and regulations, providing analysis and recommendations to CAFAA's board.

**Advocacy:** Actively represent CAFAA's interests in national code development processes, attending relevant meetings and submitting public comments.

**Communication:** Keep CAFAA members informed about code changes, updates, and their implications through newsletters, webinars, and other communication channels.

**Education:** Develop educational resources and training materials to help CAFAA members understand and implement national codes and regulations effectively.

**Collaboration:** Collaborate with other CAFAA committees and industry organizations to address common concerns and promote uniformity in code interpretation and enforcement.

**Meetings and Reporting:**

- The committee will meet regularly, with the frequency determined by the Chairperson, to discuss code-related matters, progress, and action plans.
- The Chairperson will provide regular reports to the CAFAA board on committee activities, key developments, and recommendations.

**Timeline:**

- The committee operates on an ongoing basis, aligning its activities with national code development cycles and industry needs.

California Automatic Fire Alarm Association, Inc.

TEL: (888) 607-5959

www.cafaa.com

# NFPA 72 SIG TMS Ballot

# M E M O R A N D U M

**TO:** Technical Committee on Testing and Maintenance of Fire Alarm and Signaling Systems

**FROM:** Jenny Depew, *Committee Administrator*

**DATE:** October 25, 2023

**SUBJECT:** NFPA 72® Second Draft TC FINAL Ballot Results (A2024)

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According to the final ballot results, all ballot items received the necessary affirmative votes to pass ballot.

27 **Members Eligible to Vote**
**1 Members Not Returned** *(Brockett)*

The attached report shows the number of affirmative, negative, and abstaining votes as well as the explanation of the vote for **each** revision**.**

To pass ballot, **each** revision requires: (1) a simple majority of those eligible to vote and (2) an affirmative vote of $^{2}/_{3}$ of ballots returned. See Sections 3.3.4.3.(c) and 4.3.10.1 of the ***Regulations Governing the Development of NFPA Standards***.

## Second Revision No. 5042-NFPA 72-2023 [ Detail ]

**3.3.44 Cell (as applied to batteries) .**

The basic electrochemical unit, characterized by an anode and a cathode, used to receive, store, and deliver electrical energy. [**70,** 2023] (SIG-TMS)

### Submitter Information Verification

**Committee:** SIG-TMS
**Submittal Date:** Tue Jul 18 09:07:09 EDT 2023

### Committee Statement

**Committee Statement:** This revision updates extracted text in accordance with the Extract Policy.
**Response Message:** SR-5042-NFPA 72-2023

### Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles
Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.

Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel
No further comment
Murphy, James
Agreed

## Second Revision No. 5046-NFPA 72-2023 [ Detail ]

**14.4.10.1**

Supervisory signals for in-building ERCES monitored by a fire alarm system in accordance with 24.9.1 shall be tested in accordance with item 20 of Table 14.4.3.2.

### Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 13:17:29 EDT 2023

### Committee Statement

**Committee Statement:** Chapter 24 requires ERCES supervisory signals to be monitored by a building fire alarm system when required by governing laws, codes or standards. When a building fire alarm system is monitoring these supervisory signals, they should be tested. This change makes the testing frequency to be dictated by Table 14.4.3.2 Item 20, which is for Interface Equipment. It states that the supervisory interface is tested at the frequency required by the equipment being supervised, in this case NFPA 1225.

**Response Message:** SR-5046-NFPA 72-2023

Public Comment No. 246-NFPA 72-2023 [New Section after 14.4.10]

### Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles

Biggs, John CC

Bloodworth, Anthony

Carlson, Scott D.

Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel
No further comment
Murphy, James
Agreed

## Second Revision No. 5052-NFPA 72-2023 [ Detail ]

**14.4.3.2***

Systems and associated equipment shall be tested according to Table 14.4.3.2.

**Table 14.4.3.2 Testing**

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| 1. All equipment | X | | See Table 14.3.1. |
| 2. Control unit | | | |
| (1) Functions | X | Annually | Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. |
| (2) Fuses | X | Annually | Verify rating and supervision. |
| (3) Interfaced equipment | X | Annually | Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit. |
| (4) Lamps and LEDs | X | Annually | Illuminate lamps and LEDs. |
| (5) Primary (main) power supply | X | Annually | Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | secondary (standby) power at end of test. Test redundant power supplies separately. |
| 3. Alarm control unit trouble signals | | | |
| (1) Audible and visual | X | Annually | Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting. |
| (2) Disconnect switches | X | Annually | If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected. |
| (3) Ground-fault monitoring circuit | X | Annually | If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded. |
| (4) Transmission of signals to off-premises location | X | Annually | Actuate an initiating device and verify receipt of alarm signal at the off-premises location.<br><br>Create a trouble condition and verify receipt of a trouble signal at the off-premises location.<br><br>Actuate a supervisory device and verify receipt of a supervisory signal at the off-premises location. If a transmission carrier is capable of operation under a single- or multiple-fault condition, actuate an initiating device during such fault condition and verify receipt of an alarm |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | signal and a trouble signal at the off-premises location. |
| 4. Supervising station alarm systems — transmission equipment | | | |
| (1) All equipment | X | Annually | Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.[a]<br><br>Except for DACT, actuate initiating device and verify receipt of the correct initiating device signal at the supervising station within 90 seconds. Upon completion of the test, restore the system to its functional operating condition.<br><br>If test jacks are used, conduct the first and last tests without the use of the test jack. |
| (2) Digital alarm communicator transmitter (DACT) | X | Annually | Except for DACTs installed prior to adoption of the 2013 edition of *NFPA 72* that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.<br><br>Test DACT for line seizure capability by initiating a signal while using the telephone line (primary line for DACTs using two telephone lines) for a telephone call. Ensure that the call is interrupted and that the |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | communicator connects to the digital alarm receiver. Verify receipt of the correct signal at the supervising station. Verify each transmission attempt is completed within 90 seconds from going off-hook to on-hook.<br><br>Disconnect the telephone line (primary line for DACTs using two telephone lines) from the DACT. Verify indication of the DACT trouble signal occurs at the premises fire alarm control unit (FACU) within 4 minutes of detection of the fault. Verify receipt of the telephone line trouble signal at the supervising station. Restore the telephone line (primary line for DACTs using two telephone lines), reset the FACU, and verify that the telephone line fault trouble signal returns to normal. Verify that the supervising station receives the restoral signal from the DACT.<br><br>Disconnect the secondary means of transmission from the DACT. Verify indication of the DACT trouble signal occurs at the premises FACU within 4 minutes of detection of the fault. Verify receipt of the secondary means trouble signal at the supervising station. Restore the secondary means of transmission, reset the FACU, and verify that the trouble signal returns to normal. Verify that the supervising station receives the restoral signal from the secondary transmitter. |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | Cause the DACT to transmit a signal to the DACR while a fault in the telephone line (number) (primary line for DACTs using two telephone lines) is simulated. Verify utilization of the secondary communications path by the DACT to complete the transmission to the DACR. |
| (3) Digital alarm radio transmitter (DART) | X | Annually | Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes. |
| (4) McCulloh transmitter | X | Annually | Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.<br><br>If end-to-end metallic continuity is present and with a balanced circuit, cause each of the following four transmission channel fault conditions in turn and verify receipt of correct signals at the supervising station:<br><br>(1) Open<br><br>(2) Ground<br><br>(3) Wire-to-wire short<br><br>(4) Open and ground<br><br>If end-to-end metallic continuity is not present and with a balanced circuit, cause each of the following three transmission channel fault conditions in turn and verify |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | receipt of correct signals at the supervising station:<br><br>(1) Open<br><br>(2) Ground<br><br>(3) Wire-to-wire short |
| (5) Radio alarm transmitter (RAT) | X | Annually | Cause a fault between elements of the transmitting equipment. Verify indication of the fault at the protected premises, or transmission of trouble signal to the supervising station. |
| (6) Performance-based technologies | X | Annually | Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, test secondary (standby) power sources in accordance with item 7, 8, or 9, as applicable.<br><br>Where a single communications path is used, disconnect the communication path. Manually initiate an alarm signal transmission or allow the check-in (handshake) signal to be transmitted automatically. Verify the premises unit annunciates the failure within 200 seconds of the transmission failure.[b] Restore the communication path.<br><br>Where multiple communication paths are used, disconnect all communication paths. Manually initiate an alarm signal transmission. Verify the premises control unit annunciates the failure within 200 seconds of the |

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | transmission failure. Restore all communication paths. |
| 5. | Emergency communications equipment | | | |
| | (1) Amplifier/tone generators | X | Annually | Verify correct switching and operation of backup equipment. |
| | (2) Call-in signal silence | X | Annually | Operate/function and verify receipt of correct visual and audible signals at control unit. |
| | (3) Off-hook indicator (ring down) | X | Annually | Install phone set or remove phone from hook and verify receipt of signal at control unit. |
| | (4) Phone jacks | X | Annually | Visually inspect phone jack and initiate communications path through jack. |
| | (5) Phone set | X | Annually | Actuate each phone set and verify correct operation. |
| | (6) System performance | X | Annually | Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity. |
| 6. | Engine-driven generator | X | Monthly | If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner. |
| 7. | Emergency power supply system/stored-emergencypower supply system (EPSS/SEPSS) | X | Annually | If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner operation of the EPSS/SEPSS in accordance with NFPA 111. |
| 8. | Secondary (standby) power supply[C] | X | Annually | Disconnect all primary (main) power supplies and verify the occurrence of required trouble |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems for a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test. |
| 9. VRLA battery and charger[d] | | | Prior to conducting any battery testing, verify by the person conducting the test that all system software stored in volatile memory is protected from loss. |
| (1) Temperature test | X | Semiannually | Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure. |
| (2) Charger test | X | Semiannually | With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or |

| Component | Initial Acceptance | Periodic Frequency | Method |
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| | | | replace the charger. If the charger is adjustable, adjust the output voltage to 2.265 volts, ±0.015 volts, per cell at 77°F (25°C) or as specified by the alarm equipment manufacturer. |
| (3) Cell/Unit voltage test | X | Semiannually | With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts. |
| (4) Ohmic test[e] | X | N/A | When the battery is installed, establish a baseline ohmic value for each battery cell/unit or, where available, use baseline ohmic values provided by the battery or test equipment manufacturer. In either case, record the base line ohmic value on each battery cell/unit. |
| | | Semiannually | With the battery fully charged, measure the internal ohmic value of each battery cell/unit. Record the test date and ohmic value on each cell/unit. Replace the battery when the ohmic measurement of any cell/unit deviates from the established baseline by 30 percent or more for conductance, or 40 percent or more for resistance or impedance. Where the battery or test equipment manufacturer's baseline ohmic values are used, replace the battery when any cell/unit has an internal ohmic value outside of the acceptable range. A load test performed in accordance with item 9(5) is an acceptable alternative for ~~is permitted in lieu of~~ an ohmic test. |
| (5) Replacement/Load test[f] | | Every 3 years | Replace the battery or conduct a load test of the battery capacity. Load test the battery, based on the |

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| | | | | manufacturer's specifications for a discharge rate of 3 hours or more, by applying the current indicated for the selected hourly discharge rate continuously until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80 percent or at the next scheduled test interval if battery capacity is less than 85 percent. |
| 10. | Public emergency alarm reporting system — wired system | X | Daily | Manually test the power supply for public reporting circuits and document the tests at least once during each 24-hour period. Test the following:<br><br>(1) Current strength of each circuit. Immediately investigate changes in current of any circuit exceeding 10 percent.<br><br>(2) Voltage across terminals of each circuit inside of protective devices. Immediately investigate changes in voltage of any circuit exceeding 10 percent.<br><br>(3) Voltage between ground and circuits. Immediately locate and clear the trouble if this test shows a reading in excess of 50 percent of that shown in the test specified in (2). Give early attention to readings in excess of 25 percent. Measure all readings with a calibrated voltmeter of not more than 100 ohms resistance per volt. Systems in which each circuit is supplied by an independent current source (Forms 3 and 4) require tests between ground and each side of each circuit. Common current source systems (Form 2) require voltage tests between ground and each terminal of each battery and other current source.[g] |

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| | | | | (4) Ground current readings are permitted in lieu of (3). If this method of testing is used, give immediate attention to all grounds showing a current reading in excess of 5 percent of the supplied line current.<br><br>(5) Voltage across terminals of common battery on switchboard side of fuses.<br><br>(6) Voltage between common battery terminals and ground. Immediately investigate abnormal ground readings.<br><br>Tests specified in (5) and (6) apply only to those systems using a common battery. If more than one common battery is used, test each common battery. |
| 11. | Remote annunciators | X | Annually | Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciators under a fault condition. |
| 12. | Reserved | | | |
| 13. | Reserved | | | |
| 14. | Wireless communications | X | Annually | Test in accordance with the manufacturer's published instructions. |
| 15. | Conductors — metallic | | | |
| | (1) Stray voltage | X | N/A | Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment. |

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| (2) Ground faults | X | N/A | Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground in accordance with the installed equipment manufacturer's published instructions. |
| (3) Short-circuit faults | X | N/A | Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation in accordance with the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground. |
| (4) Loop resistance | X | N/A | With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment. |
| (5) Circuit integrity | X | N/A | For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| | N/A | Annually | For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |

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| 16. | Nonmetallic pathways | | | |
| | (1) Optical fiber cables | X | N/A | Test the transmission characteristics of optical fibers with an optical power meter or with an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications. |
| | (2) Circuit integrity | X | N/A | For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| | | N/A | Annually | For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| 17. | Initiating devices[h] | | | |
| | (1) Electromechanical releasing device | | | |
| | (a) Nonrestorable-type link | X | Annually | Verify correct operation by removal of the fusible link and operation of the associated device. |

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| (b) Restorable-type link[i] | X | Annually | Verify correct operation by removal of the fusible link and operation of the associated device. |
| (2) Fire extinguishing system(s) or suppression system(s) alarm switch | X | Annually | Operate the switch mechanically or electrically and verify receipt of signal by the FACU. |
| (3) Fire–gas and other detectors | X | Annually | Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application. |
| (4) Heat detectors | | | |
| (a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type) | X | Annually (see 14.4.4.5) | Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector. |
| (b) Fixed-temperature, nonrestorable line type | X | Annually | Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test. |
| (c) Fixed-temperature, nonrestorable spot type | X | See Method column | After 15 years from initial installation, replace all devices or have 2 per every 100 detectors laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.<br><br>If detectors are tested instead of replaced, repeat tests at intervals of 5 years. |

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| | | | Do not perform heat tests. If verifying electrical continuity or supervision, test mechanically or electrically in accordance with the manufacturer’s instructions. |
| (d) Restorable line type, pneumatic tube only | X | Annually | Perform heat tests (where test chambers are in circuit) with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector, or conduct a test with pressure pump. |
| (e) Single- and multiple-station heat alarms | X | Annually | Conduct functional tests according to the manufacturer’s published instructions. Do not test nonrestorable heat detectors with heat. |
| (5) Manual fire alarm boxes | X | Annually | Operate manual fire alarm boxes in accordance with the manufacturer’s published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes. |
| (6) Radiant energy fire detectors | X | Semiannually | Test flame detectors and spark/ember detectors in accordance with the manufacturer’s published instructions to determine that each detector is operative. |
| | | | Determine flame detector and spark/ember detector sensitivity using any of the following:<br><br>(1) Calibrated test method<br><br>(2) Manufacturer’s calibrated sensitivity test instrument<br><br>(3) Listed control unit arranged for the purpose<br><br>(4) Other approved calibrated sensitivity test method that is directly proportional to the input signal from |

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| | | | a fire, consistent with the detector listing or approval<br><br>If designed to be field adjustable, replace detectors found to be outside of the approved range of sensitivity or adjust to bring them into the approved range.<br><br>Do not determine flame detector and spark/ember detector sensitivity using a light source that administers an unmeasured quantity of radiation at an undefined distance from the detector. |
| (7) Smoke detectors — functional test | | | |
| (a) In other than one- and two-family dwellings, system detectors | X | Annually | Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.[j] Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, or into the sensing chamber can be used. Magnets are not acceptable for smoke entry tests. |
| (b) Single- and multiple-station smoke alarms connected to protected premises systems | X | Annually | Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition. |
| (c) System smoke detectors used in one- and two-family dwellings | X | Annually | Conduct functional tests according to the manufacturer’s published instructions. |
| (d) Air sampling | X | Annually | Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from |

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| | | | the end sampling port or point on each pipe run and verify airflow through all other ports or points. |
| (e) Duct type | X | Annually | In addition to the testing required in item (17)(7)(a) and item (17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions. |
| (f) Projected beam type | X | Annually | Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path. |
| (g) Smoke detector with built-in thermal element | X | Annually | Operate both portions of the detector independently as described for the respective devices. |
| (h) Smoke detectors with control output functions | X | Annually | Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state. |
| (8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing | N/A | See 14.4.4.3 | Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:[k]<br><br>(1) Calibrated test method<br><br>(2) Manufacturer's calibrated sensitivity test instrument<br><br>(3) Listed control equipment arranged for the purpose<br><br>(4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit when its sensitivity is outside its listed sensitivity range |

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| | | | (5) Other calibrated sensitivity test method approved by the authority having jurisdiction |
| (9) Carbon monoxide (CO) detectors/CO alarms connected to protected premises systems | | | |
| (a) CO entry test | X | Annually | Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. |
| (b) Air sampling | X | Annually | In accordance with test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well. |
| (c) Duct type | X | Annually | Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions. |
| (d) CO detector with control output functions | X | Annually | Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state. |
| (10) Initiating devices, supervisory | | | |
| (a) Control valve switch | X | Semiannually | Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or in accordance with the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and |

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| | | | verify switch does not reset during full travel of the valve stem. |
| (b) High- or low-air pressure switch | X | Annually | Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with the manufacturer's published instructions. |
| (c) Steam pressure | X | Annually | Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the minimum operating pressure of the steam-operated equipment. |
| (d) Pressure supervisory devices for other sources | X | Annually | Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents. |
| (e) Room temperature switch | X | Annually | Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C). |
| (f) Water level switch | X | Annually | Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoration to required level. |
| (g) Water temperature switch | X | Annually | Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C). |
| (11) Mechanical, electrosonic, or pressure-type waterflow device | X | Semiannually | Flow water through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an |

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| | | | | alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25. |
| | (12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector | X | Annually | (1) Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke, heat, CO) independently for the specific detection principle, regardless of the configuration status at the time of testing, or test individual sensors together if the technology allows individual sensor responses to be verified. Where sensors cannot be tested individually, test the primary sensor.[l]<br><br>(2) Perform tests as described for the respective sensors by introduction of the physical phenomena to the sensing element. An electronic check (e.g., magnets, analog values) is not sufficient to comply with this requirement.<br><br>(3) Verify by using the detector manufacturer's published instructions that the test gas used will not impair the operation of any sensing chamber of a multi-sensor, multi-criteria, or combination fire detector.<br><br>(4) Confirm the result of the sensor(s) test(s) through indication at the detector or control unit.<br><br>(5) Record all tests and results. |
| 18. | Special hazard equipment | | | |
| | (1) Abort switch (dead-man type) | X | Annually | Activate suppression system initiating device. Operate and hold the abort switch. Verify that suppression system actuators remain de-energized after completion of discharge countdown. Release abort |

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| | | | | switch and verify that actuators energize. |
| | (2) Abort switch (recycle type) | X | Annually | Activate suppression system initiating device. Operate abort switch and verify countdown cycle restarts and suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize. |
| | (3) Abort switch (special type) | X | Annually | Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings. |
| | (4) Cross-zone detection circuit | X | Annually | Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone. |
| | (5) Matrix-type circuit | X | Annually | Operate all sensors in system. Verify development of correct matrix with each sensor operated. |
| | (6) Release solenoid circuit[m] | X | Annually | Verify operation of solenoid. |
| | (7) Squibb release circuit | X | Annually | Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light. |
| | (8) Verified, sequential, or counting zone circuit | X | Annually | Operate required sensors at a minimum of four locations in circuit. Verify correct sequence of operation with both the first and second detector in alarm. |
| | (9) All above devices or circuits or combinations thereof | X | Annually | Verify supervision of circuits by creating an open circuit. |
| 19. | Combination systems | | | |
| | (1) Fire extinguisher electronic monitoring device/system | X | Annually | Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are received at |

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| | | | | the FACU and remote annunciator(s), if applicable. |
| | (2) CO device/system | X | Annually | Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable. |
| 20. | Interface equipment[n] | X | See 14.4.4.4 | Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised. |
| 21. | Guard's tour equipment | X | Annually | Test the device in accordance with the manufacturer's published instructions. |
| 22. | Alarm notification appliances | | | |
| | (1) Audible[o] | X | N/A | For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASA S1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). |
| | | N/A | Annually | For periodic testing, verify the operation of the notification appliances.[p] |
| | (2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages) | X | N/A | For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels |

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| | | | | throughout the protected area to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST).<br><br>Verify audible information to be intelligible and in compliance with 14.4.12. |
| | | N/A | Annually | For periodic testing, verify the operation of the notification appliances.[p] |
| | (3) Visual | X | N/A | Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. |
| | | N/A | Annually | For periodic testing, verify that each appliance flashes. |
| 23. | Exit marking audible notification appliance | X | Annually | Perform tests in accordance with the manufacturer's published instructions. |
| 24. | Emergency control functions[q] | X | Annually | For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system. |
| 25. | Two-way emergency | X | Annually | Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify |

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| communications systems | | | correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.<br><br>Test the two-way communication system to verify operation and receipt of visual and audible signals at the transmitting unit and the receiving unit, respectively.<br><br>Operate systems with more than five stations with a minimum of five stations operating simultaneously.<br><br>Verify voice quality and clarity.<br><br>Verify the directions for the use of the two-way communication system, the instructions for summoning assistance via the two-way communication system, and that written identification of the location is posted adjacent to the two-way communication system.<br><br>Verify that all remote stations are readily accessible.<br><br>Verify the timed automatic communications capability to connect with a constantly attended monitoring location in accordance with 24.10.6. |
| 26. Special procedures | | | |
| (1) Alarm verification | X | Annually | Verify time delay and alarm response for smoke detector circuits identified as having alarm verification. |
| (2) Multiplex systems | X | Annually | Verify communications between sending and receiving units under both primary and secondary power.<br><br>Verify communications between sending and receiving units under open-circuit and short-circuit trouble conditions.<br><br>Verify communications between sending and receiving units in all directions where multiple communications pathways are provided.<br><br>If a redundant control unit is provided, verify switchover of all required functions |

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| | | | | and operations of the secondary control unit.<br><br>Verify all system functions and features in accordance with the manufacturer's published instructions. |
| 27. | Supervising station alarm systems — receiving equipment | | | |
| | (1) All equipment | X | Monthly | Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.<br><br>Actuate initiating device and verify receipt of the correct initiating device signal at the supervising station within 90 seconds. Upon completion of the test, restore the system to its functional operating condition.<br><br>If test jacks are used, perform the first and last tests without the use of the test jack. |
| | (2) Digital alarm communicator receiver (DACR) | X | Monthly | Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station.<br><br>Cause a signal to be transmitted on each individual incoming DACR line (path) at least once every 6 hours (24 hours for DACTs installed prior to adoption of the 2013 edition of *NFPA 72*). Verify receipt of these signals. |
| | (3) Digital alarm radio receiver (DARR) | X | Monthly | Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:<br><br>(1) AC power failure of the radio equipment<br><br>(2) Receiver malfunction |

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| | | | (3) Antenna and interconnecting cable failure<br><br>(4) Indication of automatic switchover of the DARR<br><br>(5) Data transmission line failure between the DARR and the supervising or subsidiary station |
| (4) McCulloh system | X | Monthly | Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:<br><br>(1) During functional operation<br><br>(2) On each side of the circuit with the receiving equipment conditioned for an open circuit<br><br>Cause a single break or ground condition on each transmission channel. If such a fault prevents the functioning of the circuit, verify receipt of a trouble signal. |
| (5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR) | X | Monthly | Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br><br>(1) RF transmitter in use (radiating)<br><br>(2) AC power failure supplying the radio equipment<br><br>(3) RF receiver malfunction<br><br>(4) Indication of automatic switchover |
| | | | Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br><br>(1) AC power failure supplying the radio equipment<br><br>(2) RF receiver malfunction |

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| | | | | (3) Indication of automatic switchover, if applicable |
| | (6) Private microwave radio systems | X | Monthly | Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br><br>(1) RF transmitter in use (radiating)<br><br>(2) AC power failure supplying the radio equipment<br><br>(3) RF receiver malfunction<br><br>(4) Indication of automatic switchover |
| | (7) Performance-based technologies | X | Monthly | Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect all communication paths and confirm that failure of the paths is annunciated at the supervising station within 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore all communication paths. |
| 28. | Public emergency alarm reporting system transmission equipment | | | |
| | (1) Publicly accessible alarm box | X | Semiannually | Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation |

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| | | | | (ground return), test it in this condition as one of the semiannual tests. |
| | (2) Auxiliary box | X | Annually | Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses. |
| | (3) Master box | | | |
| | (a) Manual operation | X | Semiannually | Perform the tests prescribed for 28(1). |
| | (b) Auxiliary operation | X | Annually | Perform the tests prescribed for 28(2). |
| 29. | Low-power radio (wireless systems) | X | N/A | The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:<br><br>(1) Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or the supplier's designated representative.<br><br>(2) Starting from the functional operating condition, initialize the system in accordance with the manufacturer's published instructions, including the following:<br><br>(a) Confirm the alternative communications path exists between the wireless control unit and peripheral devices used to establish initiation, indication, control, and annunciation. Test the system for both alarm and trouble conditions.<br><br>(b) For initial and reacceptance testing, confirm the introduction of a fault in any Class A or Class B radio-frequency-specified pathway results in a trouble indication at FACU. Disconnect the power (i.e., remove primary batteries) from a radio transceiver initiating device, notification appliance, or |

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| | | | | controlled device and confirm the pathway performs as indicted in 23.16.4.8 and 23.16.4.9.<br><br>Restore the system to normal and repeat the fault on not less than 10 percent of the radio frequency initiating devices, notification appliances, and controlled devices on every initiating device circuit radio pathway, notification appliance circuit radio pathway, and signaling line circuit radio pathway. Confirm all radio pathways perform as indicated in 23.16.4.8 and 23.16.4.9.<br><br>(c) For periodic testing, test each Class A and Class B radio frequency initiating device circuit radio pathway, notification appliance circuit radio pathway, and signaling line circuit radio pathway for correct indication at the control unit. Confirm all radio pathways perform as indicated in 23.16.4.8 and 23.16.4.9.<br><br>(3) Check batteries for all components in the system monthly unless the control unit checks all batteries and all components daily. |
| 30. | Mass notification system (MNS) | | | |
| | (1) Functions | X | Annually | At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. |
| | (2) Fuses | X | Annually | Verify the rating and supervision. |
| | (3) Interfaced equipment | X | Annually | Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit. |

| | | | |
|---|---|---|---|
| (4) Lamps and LEDs | X | Annually | Illuminate lamps and LEDs. |
| (5) Primary (main) power supply | X | Annually | Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately. |
| (6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages) | X | Annually | Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4/Part 1, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.<br><br>Verify audible information to be distinguishable and understandable. |
| (7) Visual | X | Annually | Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify that the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. |
| (8) Control unit functions and no diagnostic failures are indicated | X | Annually | Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. |

| | | | |
|---|---|---|---|
| (9) Control unit reset | X | Annually | Power down the central control unit computer and restart it. |
| (10) Control unit security | X | Annually | If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access. |
| (11) Audible/visual functional test | X | Annually | Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device. |
| (12) Software backup | X | Annually | Make full system software backup. Rotate backups based on accepted practice at site. |
| (13) Secondary power test | X | Annually | Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load. |
| (14) Wireless signals | X | Annually | Check forward/reflected radio power is within specifications. |
| (15) Antenna | X | Annually | Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion. |
| (16) Transceivers | X | Annually | Verify proper operation and mounting is not compromised. |

N/A: Not applicable, no minimum requirement established.

[a]Sometransmission equipment (e.g., cable modems, fiber-optic interface nodes, VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to items 7 through 9 for secondary (standby) power supply testing.

[b]Theautomatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]Seeitem 4(1) for the testing of transmission equipment. A control unit’s charger/power supply that is listed for the purpose of verifying secondary power demand is permitted to be approved for equivalency with this section.

[d]Thebattery tests in item 9 are based on VRLA batteries and it is intended that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with item 9(5) with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer’s published instructions or IEEE 450, *Recommended Practice for Maintenance,*

*Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]See A.14.4.3.2 , Table 14.4.3.2 Item 9(4).

[f]See A.14.4.3.2 , Table 14.4.3.2 Item 9(5).

[g]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[h]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see 9.6.6 of NFPA 101)* to initiate supervisory signals at the FACU should be tested at the same frequency (annually) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU. See also A.14.4.3.2, Table 14.4.3.2 Item 17 .

[i]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the FACU. They are actuated by the presence of external heat, causing a solder element in the link to fuse, or by an electric thermal device which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[j]It is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[k]There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[l]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[m]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See 14.2.10*.

[n]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the FACU, it is not necessary to test for phase reversal four times a year.

[o]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

[p]Wherebuilding, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested in accordance with the initial acceptance testing criteria.

[q]SeeA.14.4.3.2, ~~and~~ Table 14.4.3.2. I~~i~~tem 24.

## Supplemental Information

| File Name | Description | Approved |
|---|---|---|
| Chapter_14_Table_14_4_3_2_SR-5052.docx | Chapter_14_Table_14_4_3_2_SR-5052 | |

## Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 16:29:54 EDT 2023

## Committee Statement

**Committee Statement:** Editorially modified footnotes e, f, h, o, and q to make proper references to the annex material and revised Item 9(4) to clarify that a load test is permitted in lieu of an ohmic test.

**Response Message:** SR-5052-NFPA 72-2023

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles

Biggs, John CC

Bloodworth, Anthony

Carlson, Scott D.

Chavez, Louis

Chenoweth, Franklin

Coffelt, Jack P.

Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel
No further comment
Murphy, James
Agreed

## Second Revision No. 5053-NFPA 72-2023 [ Detail ]

[NFPA 101 Extract update is limited to 4th paragraph from the bottom in A.14.4.3.2 titled '9.3.2 System Design']

**9.3.2 System Design.**The engineer of record shall clearly identify the intent of the system, the design method used , the appropriateness of that method~~used~~ , and the required means of inspecting, testing, and maintaining the system. [***101*:** 9.3.2]

### Submitter Information Verification

**Committee:** SIG-TMS
**Submittal Date:** Tue Jul 18 16:45:37 EDT 2023

### Committee Statement

**Committee Statement:** This revision updates extracted text in accordance with the Extract Policy.
**Response Message:** SR-5053-NFPA 72-2023

### Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles
Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.

Heffernan, Rick

Hurst, Jr., Herbert B.

Isemann, Bill

Kerr, J. David

Kirtley, Brian Patrick

Kistner, Ariana

Kleintop, E. J.

Larrimer, Peter A.

McDonald, Joshua P.

Pothier, Katherine A.

Rawson, Christopher

Scibetta, Joe

Slattery, Michael J.

Soverino, Timothy M.

Stormer, Charles K.

Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel

No further comment

Murphy, James

Agreed

## Second Revision No. 5043-NFPA 72-2023 [ Sections 3.3.291.1, 3.3.291.2 ]

**3.3.293.1** Executive Software.

Control and supervisory program that manages the execution of all other programs and directly or indirectly causes the required functions of the product to be performed. Executive software is sometimes referred to as firmware, BIOS, or executive program and can include integrated fundamental cybersecurity protection . (SIG-TMS)

**3.3.293.2*** Site-Specific Software.

Program that is separate from, but controlled by, the executive software that allows inputs, outputs, and system configuration to be selectively defined to meet the needs of a specific installation. (SIG-TMS)

**A.3.3.293.2** Site-Specific Software.

This software should be configured in accordance with the manufacturer's guidance to maintain product efficacy and other critical functionality, such as cybersecurity. (SIG-TMS)

**3.3.293.2.1** Informational Site-Specific Software.

Programs and information that are included as part of the site-specific software but whose inclusion, exclusion, or alteration does not affect the type and quantity of hardware on a system or the system's operational sequence as intended during emergency conditions. (SIG-TMS)

**3.3.293.2.2** Operational Site-Specific Software.

Programs and information that affects the equipment and operation of a system as intended during emergency conditions. Typically, operational site-specific software defines the type and quantity of hardware and the specific operating controls or sequences of a system. (SIG-TMS)

## Submitter Information Verification

**Committee:** SIG-TMS
**Submittal Date:** Tue Jul 18 10:34:22 EDT 2023

## Committee Statement

**Committee Statement:** These revisions reflect the changes in the industry trends that need to be recognized regarding cybersecurity.
**Response Message:** SR-5043-NFPA 72-2023

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All

2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles
Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel
No further comment
Murphy, James
Agreed

## Second Revision No. 5044-NFPA 72-2023 [ New Section after 14.1.5 ]

**14.1.6**

This chapter shall not require inspection, testing, or maintenance personnel to verify the adequacy of the design of existing previously approved systems during periodic inspection, testing, and maintenance.

## Submitter Information Verification

**Committee:** SIG-TMS
**Submittal Date:** Tue Jul 18 12:15:11 EDT 2023

## Committee Statement

**Committee Statement:** This revision clarifies that it is not the responsibility of the inspection, testing, and maintenance personnel to verify the design of existing approved systems during periodic inspection, testing, and maintenance.

**Response Message:** SR-5044-NFPA 72-2023

Public Comment No. 40-NFPA 72-2023 [New Section after 14.1.5]

Public Comment No. 200-NFPA 72-2023 [New Section after 14.1.5]

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
23 Affirmative All
2 Affirmative with Comments
1 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles

Biggs, John CC

Bloodworth, Anthony

Carlson, Scott D.

Chavez, Louis

Chenoweth, Franklin

Coffelt, Jack P.

Corrin, Scott D.

Heffernan, Rick

Hurst, Jr., Herbert B.

Isemann, Bill

Kerr, J. David

Kirtley, Brian Patrick

Kistner, Ariana

Kleintop, E. J.

Larrimer, Peter A.

McDonald, Joshua P.

Pothier, Katherine A.

Rawson, Christopher

Slattery, Michael J.

Soverino, Timothy M.

Stormer, Charles K.

Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel

No further comment

Murphy, James

Agreed

**Negative with Comment**

Scibetta, Joe

Duct detector sampling tubes, pressure switches and RAMO notification zones all require some type of analysis/comparison to original design documents. This new language in the second draft contradicts that and presents a conflict. Additionally, this language hampers the ability of ITM personnel to make legitimate code-based judgment calls with regard to install-related issues. This ability is supported by the definition and allowance for observations in the Code. We should not be taking the same approach as NFPA 25, which is strictly an ITM document, and applying it to 72, which encompasses both install and ITM requirements. The latitude of the fire alarm/signaling tech is and has always been much broader than that of the fire sprinkler tech and should remain that way.

## Second Revision No. 5051-NFPA 72-2023 [ Section No. 14.4.3.2 ]

Detail SR-5052

**14.4.3.2***

Systems and associated equipment shall be tested according to Table 14.4.3.2.

Table 14.4.3.2 Testing

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| 1. | All equipment | X | | See Table 14.3.1. |
| 2. | Control unit | | | |
| | (1) Functions | X | Annually | Verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. |
| | (2) Fuses | X | Annually | Verify rating and supervision. |
| | (3) Interfaced equipment | X | Annually | Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit. |
| | (4) Lamps and LEDs | X | Annually | Illuminate lamps and LEDs. |
| | (5) Primary (main) power supply | X | Annually | Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. Test redundant power supplies separately. |
| 3. | Alarm control unit trouble signals | | | |
| | (1) Audible and visual | X | Annually | Verify operation of control unit trouble signals. Verify ring-back feature for systems using a trouble-silencing switch that requires resetting. |
| | (2) Disconnect switches | X | Annually | If control unit has disconnect or isolating switches, verify performance of intended function of each switch. Verify receipt of trouble signal when a supervised function is disconnected. |
| | (3) Ground-fault monitoring circuit | X | Annually | If the system has a ground detection feature, verify the occurrence of ground-fault indication whenever any installation conductor is grounded. |
| | (4) Transmission of signals to off-premises location | X | Annually | Actuate an initiating device and verify receipt of alarm signal at the off-premises location. |
| | | | | Create a trouble condition and verify receipt of a trouble signal at the off-premises location. |
| | | | | Actuate a supervisory device and verify receipt of a supervisory signal at the off- |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | premises location. If a transmission carrier is capable of operation under a single- or multiple-fault condition, actuate an initiating device during such fault condition and verify receipt of an alarm signal and a trouble signal at the off-premises location. |
| 4. | Supervising station alarm systems — transmission equipment | | | |
| | (1) All equipment | X | Annually | Test all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26.[a]<br>Except for DACT, actuate initiating device and verify receipt of the correct initiating device signal at the supervising station within 90 seconds. Upon completion of the test, restore the system to its functional operating condition.<br>If test jacks are used, conduct the first and last tests without the use of the test jack. |
| | (2) Digital alarm communicator transmitter (DACT) | X | Annually | Except for DACTs installed prior to adoption of the 2013 edition of *NFPA 72* that are connected to a telephone line (number) that is also supervised for adverse conditions by a derived local channel, ensure connection of the DACT to two separate means of transmission.<br>Test DACT for line seizure capability by initiating a signal while using the telephone line (primary line for DACTs using two telephone lines) for a telephone call. Ensure that the call is interrupted and that the communicator connects to the digital alarm receiver. Verify receipt of the correct signal at the supervising station. Verify each transmission attempt is completed within 90 seconds from going off-hook to on-hook.<br>Disconnect the telephone line (primary line for DACTs using two telephone lines) from the DACT. Verify indication of the DACT trouble signal occurs at the premises fire alarm control unit (FACU) within 4 minutes of detection of the fault. Verify receipt of the telephone line trouble signal at the supervising station. Restore the telephone line (primary line for DACTs using two telephone lines), reset the FACU, and verify that the |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | telephone line fault trouble signal returns to normal. Verify that the supervising station receives the restoral signal from the DACT.<br>Disconnect the secondary means of transmission from the DACT. Verify indication of the DACT trouble signal occurs at the premises FACU within 4 minutes of detection of the fault. Verify receipt of the secondary means trouble signal at the supervising station. Restore the secondary means of transmission, reset the FACU, and verify that the trouble signal returns to normal. Verify that the supervising station receives the restoral signal from the secondary transmitter.<br>Cause the DACT to transmit a signal to the DACR while a fault in the telephone line (number) (primary line for DACTs using two telephone lines) is simulated. Verify utilization of the secondary communications path by the DACT to complete the transmission to the DACR. |
| | (3) Digital alarm radio transmitter (DART) | X | Annually | Disconnect the primary telephone line. Verify transmission of a trouble signal to the supervising station by the DART occurs within 4 minutes. |
| | (4) McCulloh transmitter | X | Annually | Actuate initiating device. Verify production of not less than three complete rounds of not less than three signal impulses each by the McCulloh transmitter.<br>If end-to-end metallic continuity is present and with a balanced circuit, cause each of the following four transmission channel fault conditions in turn and verify receipt of correct signals at the supervising station:<br>(1) Open<br>(2) Ground<br>(3) Wire-to-wire short<br>(4) Open and ground<br>If end-to-end metallic continuity is not present and with a balanced circuit, cause each of the following three transmission channel fault conditions in turn and verify receipt of correct signals at the supervising station:<br>(1) Open<br>(2) Ground<br>(3) Wire-to-wire short |
| | (5) Radio alarm transmitter (RAT) | X | Annually | Cause a fault between elements of the transmitting equipment. Verify indication |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | of the fault at the protected premises, or transmission of trouble signal to the supervising station. |
| | (6) Performance-based technologies | X | Annually | Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where shared communications equipment is used as permitted by 26.6.3.12, test secondary (standby) power sources in accordance with item 7, 8, or 9, as applicable.<br>Where a single communications path is used, disconnect the communication path. Manually initiate an alarm signal transmission or allow the check-in (handshake) signal to be transmitted automatically. Verify the premises unit annunciates the failure within 200 seconds of the transmission failure.[b] Restore the communication path.<br>Where multiple communication paths are used, disconnect all communication paths. Manually initiate an alarm signal transmission. Verify the premises control unit annunciates the failure within 200 seconds of the transmission failure. Restore all communication paths. |
| 5. | Emergency communications equipment | | | |
| | (1) Amplifier/tone generators | X | Annually | Verify correct switching and operation of backup equipment. |
| | (2) Call-in signal silence | X | Annually | Operate/function and verify receipt of correct visual and audible signals at control unit. |
| | (3) Off-hook indicator (ring down) | X | Annually | Install phone set or remove phone from hook and verify receipt of signal at control unit. |
| | (4) Phone jacks | X | Annually | Visually inspect phone jack and initiate communications path through jack. |
| | (5) Phone set | X | Annually | Actuate each phone set and verify correct operation. |
| | (6) System performance | X | Annually | Operate the system with a minimum of any five handsets simultaneously. Verify voice quality and clarity. |
| 6. | Engine-driven generator | X | Monthly | If an engine-driven generator dedicated to the system is used as a required power source, verify operation of the generator and transfer switch in accordance with NFPA 110 by the building owner. |
| 7. | Emergency power supply system/stored-emergency power | X | Annually | If an EPSS/SEPSS dedicated to the system is used as a required power source, verify by the building owner |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | supply system (EPSS/SEPSS) | | | operation of the EPSS/SEPSS in accordance with NFPA 111. |
| 8. | Secondary (standby) power supply[c] | X | Annually | Disconnect all primary (main) power supplies and verify the occurrence of required trouble indication for loss of primary power. Measure or verify the system's standby and alarm current demand using the equipment manufacturer's data and verify the battery's rated capacity exceeds the system's power demand, including the safety margin. Operate general alarm systems for a minimum of 5 minutes and emergency voice communications systems for a minimum of 15 minutes. Reconnect primary (main) power supply at end of test. |
| 9. | VRLA battery and charger[d] | | | Prior to conducting any battery testing, verify by the person conducting the test that all system software stored in volatile memory is protected from loss. |
| | (1) Temperature test | X | Semiannually | Upon initially opening the cabinet door, measure the internal ambient temperature of the enclosure. Measure the temperature of each battery cell/unit at the negative terminal with an infrared thermometer. Replace any battery cell/unit if its temperature is greater than 18°F (10°C) above the measured internal ambient temperature of the enclosure. |
| | (2) Charger test | X | Semiannually | With the battery fully charged and connected to the charger, measure the voltage across the battery with a voltmeter. Verify the voltage is within the battery/alarm equipment manufacturer's recommendations. If the voltage is outside of the specified limits, either adjust the charger to within limits or replace the charger. If the charger is adjustable, adjust the output voltage to 2.265 volts, ±0.015 volts, per cell at 77°F (25°C) or as specified by the alarm equipment manufacturer. |
| | (3) Cell/Unit voltage test | X | Semiannually | With the battery fully charged and connected to the charger, measure the voltage of each cell/unit with a voltmeter. Replace the battery when any cell/unit measures a voltage less than 13.26 volts. |
| | (4) Ohmic test[e] | X | N/A | When the battery is installed, establish a baseline ohmic value for each battery cell/unit or, where available, use baseline ohmic values provided by the battery or test equipment manufacturer. In either case, record the base line ohmic value on each battery cell/unit. |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | Semiannually | With the battery fully charged, measure the internal ohmic value of each battery cell/unit. Record the test date and ohmic value on each cell/unit. Replace the battery when the ohmic measurement of any cell/unit deviates from the established baseline by 30 percent or more for conductance, or 40 percent or more for resistance or impedance. Where the battery or test equipment manufacturer's baseline ohmic values are used, replace the battery when any cell/unit has an internal ohmic value outside of the acceptable range. A load test performed in accordance with item 9(5) is ~~permitted in lieu of~~an acceptable alternative for an ohmic test. |
| | (5) Replacement/Load test[f] | | Every 3 years | Replace the battery or conduct a load test of the battery capacity. Load test the battery, based on the manufacturer's specifications for a discharge rate of 3 hours or more, by applying the current indicated for the selected hourly discharge rate continuously until the terminal voltage decreases to the end voltage specified by the manufacturer. Record the test duration and calculate the battery capacity including adjustment for ambient temperature. Replace the battery if capacity is less than or equal to 80 percent or at the next scheduled test interval if battery capacity is less than 85 percent. |
| 10. | Public emergency alarm reporting system — wired system | X | Daily | Manually test the power supply for public reporting circuits and document the tests at least once during each 24-hour period. Test the following:<br>(1) Current strength of each circuit. Immediately investigate changes in current of any circuit exceeding 10 percent.<br>(2) Voltage across terminals of each circuit inside of protective devices. Immediately investigate changes in voltage of any circuit exceeding 10 percent.<br>(3) Voltage between ground and circuits. Immediately locate and clear the trouble if this test shows a reading in excess of 50 percent of that shown in the test specified in (2). Give early attention to readings in excess of 25 percent. Measure all readings with a calibrated voltmeter of not more than 100 ohms resistance per volt. Systems in which each circuit is supplied by an independent current source (Forms 3 |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | and 4) require tests between ground and each side of each circuit. Common current source systems (Form 2) require voltage tests between ground and each terminal of each battery and other current source.[g]<br>(4) Ground current readings are permitted in lieu of (3). If this method of testing is used, give immediate attention to all grounds showing a current reading in excess of 5 percent of the supplied line current.<br>(5) Voltage across terminals of common battery on switchboard side of fuses.<br>(6) Voltage between common battery terminals and ground. Immediately investigate abnormal ground readings.<br>Tests specified in (5) and (6) apply only to those systems using a common battery. If more than one common battery is used, test each common battery. |
| 11. | Remote annunciators | X | Annually | Verify the correct operation and identification of annunciators. If provided, verify the correct operation of annunciators under a fault condition. |
| 12. | Reserved | | | |
| 13. | Reserved | | | |
| 14. | Wireless communications | X | Annually | Test in accordance with the manufacturer's published instructions. |
| 15. | Conductors — metallic | | | |
| | (1) Stray voltage | X | N/A | Test all installation conductors with a volt/ohmmeter to verify that there are no stray (unwanted) voltages between installation conductors or between installation conductors and ground. Verify the maximum allowable stray voltage does not exceed 1 volt ac/dc, unless a different threshold is specified in the manufacturer's published instructions for the installed equipment. |
| | (2) Ground faults | X | N/A | Test all installation conductors, other than those intentionally and permanently grounded, for isolation from ground in accordance with the installed equipment manufacturer's published instructions. |
| | (3) Short-circuit faults | X | N/A | Test all installation conductors, other than those intentionally connected together, for conductor-to-conductor isolation in accordance with the manufacturer's published instructions for the installed equipment. Also test these same circuits conductor-to-ground. |

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | (4) Loop resistance | X | N/A | With each initiating and indicating circuit installation conductor pair short-circuited at the far end, measure and record the resistance of each circuit. Verify that the loop resistance does not exceed the limits specified in the manufacturer's published instructions for the installed equipment. |
| | (5) Circuit integrity | X | N/A | For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| | | N/A | Annually | For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| 16. | Nonmetallic pathways | | | |
| | (1) Optical fiber cables | X | N/A | Test the transmission characteristics of optical fibers with an optical power meter or with an optical time domain reflectometer used to measure the relative power loss of the line. Test result data must meet or exceed ANSI/TIA 568.3, *Optical Fiber Cabling and Components Standard*, related to fiber-optic lines and connection/splice losses and the control unit manufacturer's published specifications. |
| | (2) Circuit integrity | X | N/A | For initial and reacceptance testing, confirm the introduction of a fault in any circuit monitored for integrity results in a trouble indication at the FACU. Open one connection at not less than 10 percent of the initiating devices, notification appliances, and controlled devices on every initiating device circuit, notification appliance circuit, and signaling line circuit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |
| | | N/A | Annually | For periodic testing, test each initiating device circuit, notification appliance circuit, and signaling line circuit for correct indication at the control unit. Confirm all circuits perform as indicated in Sections 23.5, 23.6, and 23.7. |

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| 17. | Initiating devices[h] | | | |
| | (1) Electromechanical releasing device | | | |
| | (a) Nonrestorable-type link | X | Annually | Verify correct operation by removal of the fusible link and operation of the associated device. |
| | (b) Restorable-type link[i] | X | Annually | Verify correct operation by removal of the fusible link and operation of the associated device. |
| | (2) Fire extinguishing system(s) or suppression system(s) alarm switch | X | Annually | Operate the switch mechanically or electrically and verify receipt of signal by the FACU. |
| | (3) Fire–gas and other detectors | X | Annually | Test fire–gas detectors and other fire detectors as prescribed by the manufacturer and as necessary for the application. |
| | (4) Heat detectors | | | |
| | (a) Fixed-temperature, rate-of-rise, rate of compensation, restorable line, spot type (excluding pneumatic tube type) | X | Annually (see 14.4.4.5) | Perform heat test with a listed and labeled heat source or in accordance with the manufacturer's published instructions. Assure that the test method for the installed equipment does not damage the nonrestorable fixed-temperature element of a combination rate-of-rise/fixed-temperature element detector. |
| | (b) Fixed-temperature, nonrestorable line type | X | Annually | Do not perform heat test. Test functionality mechanically and electrically. Measure and record loop resistance. Investigate changes from acceptance test. |
| | (c) Fixed-temperature, nonrestorable spot type | X | See Method column | After 15 years from initial installation, replace all devices or have 2 per every 100 detectors laboratory tested. Replace the 2 detectors with new devices. If a failure occurs on any of the detectors removed, remove and test additional detectors to determine either a general problem involving faulty detectors or a localized problem involving 1 or 2 defective detectors.<br>If detectors are tested instead of replaced, repeat tests at intervals of 5 years.<br>Do not perform heat tests. If verifying electrical continuity or supervision, test mechanically or electrically in accordance with the manufacturer's instructions. |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| (d) Restorable line type, pneumatic tube only | X | Annually | Perform heat tests (where test chambers are in circuit) with a listed and labeled heat source or in accordance with the manufacturer's published instructions of the detector, or conduct a test with pressure pump. |
| (e) Single- and multiple-station heat alarms | X | Annually | Conduct functional tests according to the manufacturer's published instructions. Do not test nonrestorable heat detectors with heat. |
| (5) Manual fire alarm boxes | X | Annually | Operate manual fire alarm boxes in accordance with the manufacturer's published instructions. Test both key-operated presignal and general alarm manual fire alarm boxes. |
| (6) Radiant energy fire detectors | X | Semiannually | Test flame detectors and spark/ember detectors in accordance with the manufacturer's published instructions to determine that each detector is operative.<br>Determine flame detector and spark/ember detector sensitivity using any of the following:<br>(1) Calibrated test method<br>(2) Manufacturer's calibrated sensitivity test instrument<br>(3) Listed control unit arranged for the purpose<br>(4) Other approved calibrated sensitivity test method that is directly proportional to the input signal from a fire, consistent with the detector listing or approval<br>If designed to be field adjustable, replace detectors found to be outside of the approved range of sensitivity or adjust to bring them into the approved range.<br>Do not determine flame detector and spark/ember detector sensitivity using a light source that administers an unmeasured quantity of radiation at an undefined distance from the detector. |
| (7) Smoke detectors — functional test | | | |
| (a) In other than one- and two-family dwellings, system detectors | X | Annually | Test smoke detectors in place to ensure smoke entry into the sensing chamber and an alarm response.[j] Use smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. Other methods listed in the manufacturer's published instructions that ensure smoke entry from the protected area, through the vents, or into the sensing chamber |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | can be used. Magnets are not acceptable for smoke entry tests. |
| (b) Single- and multiple-station smoke alarms connected to protected premises systems | X | Annually | Perform a functional test on all single- and multiple-station smoke alarms connected to a protected premises fire alarm system by putting the smoke alarm into an alarm condition. |
| (c) System smoke detectors used in one- and two-family dwellings | X | Annually | Conduct functional tests according to the manufacturer's published instructions. |
| (d) Air sampling | X | Annually | Test with smoke or a listed and labeled product acceptable to the manufacturer or in accordance with their published instructions. In the absence of an automatic, listed airflow supervision feature, test from the end sampling port or point on each pipe run and verify airflow through all other ports or points. |
| (e) Duct type | X | Annually | In addition to the testing required in item (17)(7)(a) and item (17)(8), test duct smoke detectors that use sampling tubes to ensure that they will properly sample the airstream in the duct using a method acceptable to the manufacturer or in accordance with their published instructions. |
| (f) Projected beam type | X | Annually | Test the detector by introducing smoke, other aerosol, or an optical filter into the beam path. |
| (g) Smoke detector with built-in thermal element | X | Annually | Operate both portions of the detector independently as described for the respective devices. |
| (h) Smoke detectors with control output functions | X | Annually | Verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state. |
| (8) Smoke detectors in other than one- and two-family dwellings, system detectors — sensitivity testing | N/A | See 14.4.4.3 | Perform any of the following tests to ensure that each smoke detector is within its listed and marked sensitivity range:[k]<br>(1) Calibrated test method<br>(2) Manufacturer's calibrated sensitivity test instrument<br>(3) Listed control equipment arranged for the purpose<br>(4) Smoke detector/control unit arrangement whereby the detector causes a signal at the control unit when |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | its sensitivity is outside its listed sensitivity range<br>(5) Other calibrated sensitivity test method approved by the authority having jurisdiction |
| (9) Carbon monoxide (CO) detectors/CO alarms connected to protected premises systems | | | |
| (a) CO entry test | X | Annually | Test the devices in place to ensure CO entry to the sensing chamber by introduction through the vents, to the sensing chamber of listed and labeled product acceptable to the manufacturer or in accordance with manufacturer's published instructions. |
| (b) Air sampling | X | Annually | In accordance with test methods documented in the manufacturer's published instructions, verify detector alarm response through the end sampling port on each pipe run; verify airflow through all other ports as well. |
| (c) Duct type | X | Annually | Test or inspect air duct detectors to ensure that the device will sample the airstream in accordance with the manufacturer's published instructions. |
| (d) CO detector with control output functions | X | Annually | Within each protected space, verify that the control capability remains operable even if all of the initiating devices connected to the same initiating device circuit or signaling line circuit are in an alarm state. |
| (10) Initiating devices, supervisory | | | |
| (a) Control valve switch | X | Semiannually | Operate valve and verify signal receipt to be within the first two revolutions of the handwheel or within one-fifth of the travel distance, or in accordance with the manufacturer's published instructions. Continue to cycle outside stem and yoke valves and verify switch does not reset during full travel of the valve stem. |
| (b) High- or low-air pressure switch | X | Annually | Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased a maximum 10 psi (70 kPa) from the required pressure level or in accordance with the dry pipe or preaction valve manufacturer's published instructions. |
| (c) Steam pressure | X | Annually | Operate switch and verify receipt of signal is obtained before pressure decreases to 110 percent of the |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | minimum operating pressure of the steam-operated equipment. |
| (d) Pressure supervisory devices for other sources | X | Annually | Operate switch and verify receipt of signal is obtained where the required pressure is increased or decreased from the normal operating pressure by an amount specified in approved design documents. |
| (e) Room temperature switch | X | Annually | Operate switch and verify receipt of signal to indicate the decrease in room temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C). |
| (f) Water level switch | X | Annually | Operate switch and verify receipt of signal indicating the water level raised or lowered a maximum 3 in. (70 mm) from the required level within a pressure tank, or a maximum 12 in. (300 mm) from the required level of a nonpressure tank. Also verify its restoration to required level. |
| (g) Water temperature switch | X | Annually | Operate switch and verify receipt of signal to indicate the decrease in water temperature to 40°F (4.4°C) and its restoration to above 40°F (4.4°C). |
| (11) Mechanical, electrosonic, or pressure-type waterflow device | X | Semiannually | Flow water through an inspector's test connection indicating the flow of water equal to that from a single sprinkler of the smallest orifice size installed in the system or other listed and approved waterflow switch test methods for wet-pipe systems, or an alarm test bypass connection for dry-pipe, pre-action, or deluge systems in accordance with NFPA 25. |
| (12) Multi-sensor fire detector or multi-criteria fire detector or combination fire detector | X | Annually | (1) Test each detector in accordance with the manufacturer's published instructions. Test each of the sensors present within the detector (e.g., smoke, heat, CO) independently for the specific detection principle, regardless of the configuration status at the time of testing, or test individual sensors together if the technology allows individual sensor responses to be verified. Where sensors cannot be tested individually, test the primary sensor.[I]<br><br>(2) Perform tests as described for the respective sensors by introduction of the physical phenomena to the sensing element. An electronic check (e.g., magnets, analog values) is not sufficient to comply with this requirement.<br><br>(3) Verify by using the detector manufacturer's published instructions that the test gas used will not impair the |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | operation of any sensing chamber of a multi-sensor, multi-criteria, or combination fire detector.<br>(4) Confirm the result of the sensor(s) test(s) through indication at the detector or control unit.<br>(5) Record all tests and results. |
| 18. | Special hazard equipment | | | |
| | (1) Abort switch (dead-man type) | X | Annually | Activate suppression system initiating device. Operate and hold the abort switch. Verify that suppression system actuators remain de-energized after completion of discharge countdown. Release abort switch and verify that actuators energize. |
| | (2) Abort switch (recycle type) | X | Annually | Activate suppression system initiating device. Operate abort switch and verify countdown cycle restarts and suppression system actuators remain de-energized. Allow countdown to complete and verify that actuators energize. |
| | (3) Abort switch (special type) | X | Annually | Activate suppression system initiating device. Operate abort switch and verify operation in accordance with the sequence of operation as specified on as-built drawings. |
| | (4) Cross-zone detection circuit | X | Annually | Activate one detector in each zone. Verify occurrence of correct sequence of operation for the first zone and then the second zone. |
| | (5) Matrix-type circuit | X | Annually | Operate all sensors in system. Verify development of correct matrix with each sensor operated. |
| | (6) Release solenoid circuit[m] | X | Annually | Verify operation of solenoid. |
| | (7) Squibb release circuit | X | Annually | Use AGI flashbulb or other test light approved by the manufacturer. Verify operation of flashbulb or light. |
| | (8) Verified, sequential, or counting zone circuit | X | Annually | Operate required sensors at a minimum of four locations in circuit. Verify correct sequence of operation with both the first and second detector in alarm. |
| | (9) All above devices or circuits or combinations thereof | X | Annually | Verify supervision of circuits by creating an open circuit. |
| 19. | Combination systems | | | |
| | (1) Fire extinguisher electronic monitoring device/system | X | Annually | Test communication between the device connecting the fire extinguisher electronic monitoring device/system and the FACU to ensure proper signals are |

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | received at the FACU and remote annunciator(s), if applicable. |
| | (2) CO device/system | X | Annually | Test communication between the device connecting the CO device/system and the FACU to ensure proper signals are received at the FACU and remote annunciator(s), if applicable. |
| 20. | Interface equipment[n] | X | See 14.4.4.4 | Test interface equipment connections by operating or simulating the equipment being supervised. Verify signals required to be transmitted are received at the control unit. Test frequency for interface equipment is the same as the frequency required by the applicable NFPA standard(s) for the equipment being supervised. |
| 21. | Guard's tour equipment | X | Annually | Test the device in accordance with the manufacturer's published instructions. |
| 22. | Alarm notification appliances | | | |
| | (1) Audible[o] | X | N/A | For initial and reacceptance testing, measure sound pressure levels for alert tone signals and evacuation signal tones with a sound level meter meeting ANSI/ASA S1.4/~~Part 1~~, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). |
| | | N/A | Annually | For periodic testing, verify the operation of the notification appliances.[p] |
| | (2) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages) | X | N/A | For initial and reacceptance testing, measure sound pressure levels for signals with a sound level meter meeting ANSI/ASA S1.4/~~Part 1~~, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure sound pressure levels throughout the protected area to determine if they comply with Chapter 18 and the required performance, as documented in accordance with 7.3.4. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | (3) Visual | N/A | Annually | Verify audible information to be intelligible and in compliance with 14.4.12.<br>For periodic testing, verify the operation of the notification appliances.[p] |
| | | X | N/A | Perform initial and reacceptance testing in accordance with the manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify the candela rating or method of candela control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. |
| | | N/A | Annually | For periodic testing, verify that each appliance flashes. |
| 23. | Exit marking audible notification appliance | X | Annually | Perform tests in accordance with the manufacturer's published instructions. |
| 24. | Emergency control functions[q] | X | Annually | For initial, reacceptance, and periodic testing, verify emergency control function interface device activation. Where an emergency control function interface device is disabled or disconnected during initiating device testing, verify that the disabled or disconnected emergency control function interface device has been properly restored, including electromagnetic devices used for door releasing services as part of a fire alarm system. |
| 25. | Two-way emergency communications systems | X | Annually | Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or by the supplier's designated representative.<br>Test the two-way communication system to verify operation and receipt of visual and audible signals at the transmitting unit and the receiving unit, respectively.<br>Operate systems with more than five stations with a minimum of five stations operating simultaneously.<br>Verify voice quality and clarity.<br>Verify the directions for the use of the two-way communication system, the instructions for summoning assistance via the two-way communication system, and that written identification of the location is posted adjacent to the two-way communication system. |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | Verify that all remote stations are readily accessible. |
| | | | | Verify the timed automatic communications capability to connect with a constantly attended monitoring location in accordance with 24.10.6. |
| 26. | Special procedures | | | |
| | (1) Alarm verification | X | Annually | Verify time delay and alarm response for smoke detector circuits identified as having alarm verification. |
| | (2) Multiplex systems | X | Annually | Verify communications between sending and receiving units under both primary and secondary power. |
| | | | | Verify communications between sending and receiving units under open-circuit and short-circuit trouble conditions. |
| | | | | Verify communications between sending and receiving units in all directions where multiple communications pathways are provided. |
| | | | | If a redundant control unit is provided, verify switchover of all required functions and operations of the secondary control unit. |
| | | | | Verify all system functions and features in accordance with the manufacturer's published instructions. |
| 27. | Supervising station alarm systems — receiving equipment | | | |
| | (1) All equipment | X | Monthly | Perform tests on all system functions and features in accordance with the equipment manufacturer's published instructions for correct operation in conformance with the applicable sections of Chapter 26. |
| | | | | Actuate initiating device and verify receipt of the correct initiating device signal at the supervising station within 90 seconds. Upon completion of the test, restore the system to its functional operating condition. |
| | | | | If test jacks are used, perform the first and last tests without the use of the test jack. |
| | (2) Digital alarm communicator receiver (DACR) | X | Monthly | Disconnect each transmission means in turn from the DACR, and verify audible and visual annunciation of a trouble signal in the supervising station. |
| | | | | Cause a signal to be transmitted on each individual incoming DACR line (path) at least once every 6 hours (24 hours for DACTs installed prior to adoption of the |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | 2013 edition of *NFPA 72*). Verify receipt of these signals. |
| (3) Digital alarm radio receiver (DARR) | X | Monthly | Cause the following conditions of all DARRs on all subsidiary and repeater station receiving equipment. Verify receipt at the supervising station of correct signals for each of the following conditions:<br>(1) AC power failure of the radio equipment<br>(2) Receiver malfunction<br>(3) Antenna and interconnecting cable failure<br>(4) Indication of automatic switchover of the DARR<br>(5) Data transmission line failure between the DARR and the supervising or subsidiary station |
| (4) McCulloh system | X | Monthly | Test and record the current on each circuit at each supervising and subsidiary station under the following conditions:<br>(1) During functional operation<br>(2) On each side of the circuit with the receiving equipment conditioned for an open circuit<br>Cause a single break or ground condition on each transmission channel. If such a fault prevents the functioning of the circuit, verify receipt of a trouble signal. |
| (5) Radio alarm supervising station receiver (RASSR) and radio alarm repeater station receiver (RARSR) | X | Monthly | Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br>(1) RF transmitter in use (radiating)<br>(2) AC power failure supplying the radio equipment<br>(3) RF receiver malfunction<br>(4) Indication of automatic switchover<br>Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br>(1) AC power failure supplying the radio equipment<br>(2) RF receiver malfunction |

| | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | (3) Indication of automatic switchover, if applicable |
| | (6) Private microwave radio systems | X | Monthly | Cause each of the following conditions at each of the supervising or subsidiary stations and all repeater station radio transmitting and receiving equipment; verify receipt of correct signals at the supervising station:<br>(1) RF transmitter in use (radiating)<br>(2) AC power failure supplying the radio equipment<br>(3) RF receiver malfunction<br>(4) Indication of automatic switchover |
| | (7) Performance-based technologies | X | Monthly | Perform tests to ensure the monitoring of integrity of the transmission technology and technology path. Where a single communications path is used, disconnect the communication path. Verify that failure of the path is annunciated at the supervising station within 60 minutes of the failure (within 5 minutes for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore the communication path. Where multiple communication paths are used, disconnect all communication paths and confirm that failure of the paths is annunciated at the supervising station within 6 hours of the failure (within 24 hours for communication equipment installed prior to adoption of the 2013 edition of *NFPA 72*). Restore all communication paths. |
| 28. | Public emergency alarm reporting system transmission equipment | | | |
| | (1) Publicly accessible alarm box | X | Semiannually | Actuate publicly accessible initiating device(s) and verify receipt of not less than three complete rounds of signal impulses. Perform this test under normal circuit conditions. If the device is equipped for open circuit operation (ground return), test it in this condition as one of the semiannual tests. |
| | (2) Auxiliary box | X | Annually | Test each initiating circuit of the auxiliary box by actuation of a protected premises initiating device connected to that circuit. Verify receipt of not less than three complete rounds of signal impulses. |
| | (3) Master box | | | |
| | (a) Manual operation | X | Semiannually | Perform the tests prescribed for 28(1). |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | (b) Auxiliary operation | X | Annually | Perform the tests prescribed for 28(2). |
| 29. | Low-power radio (wireless systems) | X | N/A | The following procedures describe additional acceptance and reacceptance test methods to verify wireless protection system operation:<br>(1) Use the manufacturer's published instructions and the as-built drawings provided by the system supplier to verify correct operation after the initial testing phase has been performed by the supplier or the supplier's designated representative.<br>(2) Starting from the functional operating condition, initialize the system in accordance with the manufacturer's published instructions, including the following:<br>(a) Confirm the alternative communications path exists between the wireless control unit and peripheral devices used to establish initiation, indication, control, and annunciation. Test the system for both alarm and trouble conditions.<br>(b) For initial and reacceptance testing, confirm the introduction of a fault in any Class A or Class B radio-frequency-specified pathway results in a trouble indication at FACU. Disconnect the power (i.e., remove primary batteries) from a radio transceiver initiating device, notification appliance, or controlled device and confirm the pathway performs as indicted in 23.16.4.8 and 23.16.4.9.<br>Restore the system to normal and repeat the fault on not less than 10 percent of the radio frequency initiating devices, notification appliances, and controlled devices on every initiating device circuit radio pathway, notification appliance circuit radio pathway, and signaling line circuit radio pathway. Confirm all radio pathways perform as indicated in 23.16.4.8 and 23.16.4.9.<br>(c) For periodic testing, test each Class A and Class B radio frequency initiating device circuit radio pathway, notification appliance circuit radio pathway, and signaling line circuit radio pathway for correct indication at the control unit. Confirm all radio pathways perform as indicated in 23.16.4.8 and 23.16.4.9. |

| - | Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|---|
| | | | | (3) Check batteries for all components in the system monthly unless the control unit checks all batteries and all components daily. |
| 30. | Mass notification system (MNS) | | | |
| | (1) Functions | X | Annually | At a minimum, test control unit to verify correct receipt of alarm, supervisory, and trouble signals (inputs); operation of evacuation signals and auxiliary functions (outputs); circuit supervision, including detection of open circuits and ground faults; and power supply supervision for detection of loss of ac power and disconnection of secondary batteries. |
| | (2) Fuses | X | Annually | Verify the rating and supervision. |
| | (3) Interfaced equipment | X | Annually | Verify integrity of single or multiple circuits providing interface between two or more control units. Test interfaced equipment connections by operating or simulating operation of the equipment being supervised. Verify signals required to be transmitted at the control unit. |
| | (4) Lamps and LEDs | X | Annually | Illuminate lamps and LEDs. |
| | (5) Primary (main) power supply | X | Annually | Disconnect all secondary (standby) power and test under maximum load, including all alarm appliances requiring simultaneous operation. Reconnect all secondary (standby) power at end of test. For redundant power supplies, test each separately. |
| | (6) Audible textual notification appliances (loudspeakers and other appliances to convey voice messages) | X | Annually | Measure sound pressure level with a sound level meter meeting ANSI/ASA S1.4~~/Part 1~~, *Electroacoustics — Sound Level Meters — Part 1: Specifications,* Type 2 requirements. Measure and record levels throughout protected area. Set the sound level meter in accordance with ANSI/ASA S3.41, *Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI),* using the time-weighted characteristic F (FAST). Record the maximum output when the audible emergency evacuation signal is on.<br>Verify audible information to be distinguishable and understandable. |
| | (7) Visual | X | Annually | Perform test in accordance with manufacturer's published instructions. Verify appliance locations to be in accordance with the approved layout and confirm that no floor plan changes affect the approved layout. Verify that the candela rating or method of candela |

| Component | Initial Acceptance | Periodic Frequency | Method |
|---|---|---|---|
| | | | control marking on each visual appliance and rating when reported by the FACU agrees with the approved drawings. Confirm that each appliance flashes. |
| (8) Control unit functions and no diagnostic failures are indicated | X | Annually | Review event log file and verify that the correct events were logged. Review system diagnostic log file; correct deficiencies noted in file. Delete unneeded log files. Delete unneeded error files. Verify that sufficient free disk space is available. Verify unobstructed flow of cooling air is available. Change/clean filters, cooling fans, and intake vents. |
| (9) Control unit reset | X | Annually | Power down the central control unit computer and restart it. |
| (10) Control unit security | X | Annually | If remote control software is loaded onto the system, verify that it is disabled to prevent unauthorized system access. |
| (11) Audible/visual functional test | X | Annually | Send out an alert to a diverse set of predesignated receiving devices and confirm receipt. Include at least one of each type of receiving device. |
| (12) Software backup | X | Annually | Make full system software backup. Rotate backups based on accepted practice at site. |
| (13) Secondary power test | X | Annually | Disconnect ac power. Verify the ac power failure alarm status on central control unit. With ac power disconnected, verify battery voltage under load. |
| (14) Wireless signals | X | Annually | Check forward/reflected radio power is within specifications. |
| (15) Antenna | X | Annually | Check forward/reflected radio power is within specifications. Verify solid electrical connections with no observable corrosion. |
| (16) Transceivers | X | Annually | Verify proper operation and mounting is not compromised. |

N/A: Not applicable, no minimum requirement established.

[a]Some transmission equipment (e.g., cable modems, fiber-optic interface nodes, VoIP interfaces) are typically powered by the building's electrical system using a secondary (standby) power supply that does not meet the requirements of this Code. This is intended to ensure that the testing authority verifies full secondary (standby) power as required by Chapter 10. Additionally, refer to items 7 through 9 for secondary (standby) power supply testing.

[b]The automatic transmission of the check-in (handshake) signal can take up to 60 minutes to occur.

[c]See item 4(1) for the testing of transmission equipment. A control unit’s charger/power supply that is listed for the purpose of verifying secondary power demand is permitted to be approved for equivalency with this section.

[d]The battery tests in item 9 are based on VRLA batteries and it is intended that the tests specified in (1) through (4) be performed in order. FACU automated load testing of VRLA batteries in accordance with item 9(5) with record of ambient temperature is an acceptable alternative to prescriptive manual methods using test equipment. For other secondary battery types, refer to the battery manufacturer's published instructions or IEEE 450, *Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications*, for vented lead-acid batteries, and IEEE 1106, *Recommended Practice for Installation, Maintenance, Testing, and Replacement of Vented Nickel-Cadmium Batteries for Stationary Applications*, for nickel-cadmium batteries.

[e]See ~~item~~ A.14.4.3.2, Table 14.4.3.2 Item 9(4).

[f]See ~~item~~ A.14.4.3.2, Table 14.4.3.2 Item 9(5).

[g]The voltmeter sensitivity has been changed from 1000 ohms per volt to 100 ohms per volt so that the false ground readings (caused by induced voltages) are minimized.

[h]Initiating devices such as smoke detectors used for elevator recall, closing dampers, or releasing doors held in the open position that are permitted by the Code *(see 9.6.6 of NFPA 101)* to initiate supervisory signals at the FACU should be tested at the same frequency (annually) as those devices when they are generating an alarm signal. They are not supervisory devices, but they initiate a supervisory signal at the FACU. See also A.14.4.3.2, Table 14.4.3.2 Item 17.

[i]Fusible thermal link detectors are commonly used to close fire doors and fire dampers electrically connected to the FACU. They are actuated by the presence of external heat, causing a solder element in the link to fuse, or by an electric thermal device which, when energized, generates heat within the body of the link, causing the link to fuse and separate.

[j]It is customary for the manufacturer of the smoke detector to test a particular product from an aerosol provider to determine acceptability for use in smoke entry testing of their smoke detector/smoke alarm. Magnets are not acceptable for smoke entry tests.

[k]There are some detectors that use magnets as a manufacturer's calibrated sensitivity test instrument.

[l]For example, it might not be possible to individually test the heat sensor in a thermally enhanced smoke detector.

[m]Manufacturer's published instructions should be consulted to ensure a proper operational test. No suppression gas or agent is expected to be discharged during the test of the solenoid. *See 14.2.10*.

[n]A monitor module installed on an interface device is not considered a supervisory device and therefore not subject to the quarterly testing frequency requirement. Test frequencies for interface devices should be in accordance with the applicable standard. For example, fire pump controller alarms such as phase reversal are required to be tested annually. If a monitor module is installed to identify phase reversal on the FACU, it is not necessary to test for phase reversal four times a year.

[o]Chapter 18 would require 15 dB over average ambient sound for public mode spaces. Sometimes the ambient sound levels are different from what the design was based upon. Private operating mode would require 10 dB over average ambient at the location of the device. See also A.14.4.3.2, Table 14.4.3.2 Item 22(1) and 22(2).

[p]Where building, system, or occupancy changes have been observed, the owner should be notified of the changes. New devices might need to be installed and tested in accordance with the initial acceptance testing criteria.

[q]See A.14.4.3.2 ~~and item~~ , Table 14.4.3.2 Item 24.

**A.14.4.3.2**

**Table 14.4.3.2 Item 9(4).** Ohmic testing is a means to determine the state of health of a VRLA battery's cells by measuring some form of a cell's internal resistance. Typically, ohmic testing equipment uses one of three techniques — conductance, impedance, or resistance — to make these measurements.

In simplest technical terms, ohmic technology is based on Ohm's law, which expresses the relationship between volts, amperes, and ohms in an electrical circuit. Ohmic testing attempts to use voltage and current to determine the resistive characteristic of a battery's cells. As the cells in a battery age and start to lose capacity, the internal components of the battery are undergoing a degradation process. The degradation of these components (plates, grids, internal connection straps) within the battery's cells causes an increased resistance in the conduction paths of the cell, which in turn causes a change in the internal ohmic values. A measured increase in impedance or resistance, or a decrease in conductance, indicates the battery is losing its ability to produce the energy it was designed to deliver when called upon to support the connected loads.

The key to effective application of ohmic testing is the appropriate trending of test results over time compared to a baseline or reference value. Studies have demonstrated that an individual battery produces a unique ohmic "signature" and the use of ohmic testing equipment to trend changes in this signature from installation through the life of the battery is the most effective use of the technology. A program that involves ohmic testing on a regular interval to note changes in the battery is a good maintenance practice.

An ohmic baseline reference value is a benchmark value based on data collected from known good batteries. Reference values can be determined from site-specific measurement, or from testing a sample of new healthy batteries, or by using a generic baseline value to get started.

(1) The best baseline is one established on the installed battery within three to six months after installation and trend accordingly using good record keeping. Ideally the individual ohmic value should be measured at installation and again after the battery has been on float charge for at least 72 hours in order for it to reach a high state of stabilization. These initial "site-specific" values should be recorded and permanently affixed to the battery as a baseline for subsequent tests over the life of the battery. The ohmic value will typically increase for conductance and decrease for resistance and impedance between the initial installation and after being on float-charge for 90 to 180 days (10 percent to 15 percent depending on battery type and size). Six months after installation measure and compare the ohmic readings to the readings taken at installation. Use whichever value is greater for conductance or lower for resistance and impedance as the baseline for that particular battery at that site going forward.

(2) A sample of new healthy batteries in a fully charged state can be tested to obtain a baseline value representative of a new battery. A sample size of at least 30 batteries from one manufacturer with the same make, model, amp-hour rating, age (within 6 months), and manufacturing lot is recommended. Record the following information for the batteries:

    (a) Battery manufacturer

    (b) Model number

    (c) Date of manufacture

    (d) Manufacturing lot number (if available)

    (e) Battery temperature

    (f) Whether or not the battery has had a freshening charge

    (g) Battery voltage

    (h) Ohmic test value

    Calculate the average ohmic value of the batteries. Do not include batteries that deviate more than 30 percent from the average because they could be outside of an acceptable range. Use the average value as a baseline starting point for this model battery.

(3) A generic baseline value for a specific battery model can often be found by contacting the ohmic test equipment manufacturer or from the battery manufacturer. While it is important to note that the use of generic reference values might not be as accurate, it is still possible to identify grossly failed batteries and significant changes in battery condition by applying this method. Generic baseline values are typical averages to be used as general guidelines and should only be used when no other data is available. When testing older batteries for which no initial site-specific ohmic value is available, reference values can be obtained in the following ways:

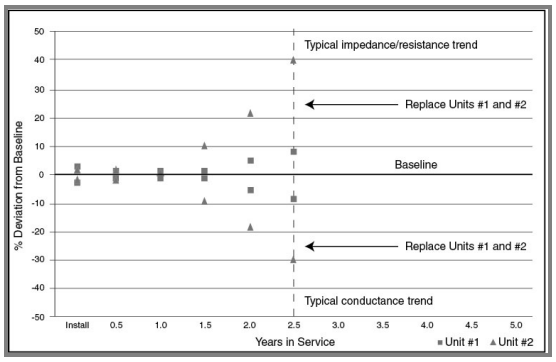
(a) Contact the equipment or battery manufacturer for assistance.

(b) Consult your company documentation to see if reference values were created for the battery you are testing.

(c) Using ohmic readings of recently installed batteries of the same manufacturer and model of the battery, manufacturer and model of the alarm panel/system, charging circuit, and temperature at time of measurements, calculate the average ohmic value of the best 8 to 10 batteries and use this value as a baseline reference.

As a battery ages and loses capacity, the internal ohmic values change. Although the change might not be perfectly consistent over all battery models and sizes, experience and extensive test data shows that a deviation of ohmic values from the established baseline by 30 percent or more for conductance and 40 percent or more for resistance or impedance indicates that the actual battery capacity has dropped to 80 percent or lower. (For lead-acid batteries, capacity drops off rapidly once the 80 percent capacity point is reached in the lifetime curve, so this is known as the “knee” of the capacity vs. lifetime curve). This 80 percent capacity is the level at which battery manufacturers recommend battery replacement. Figure A.14.4.3.2 illustrates an ohmic trend of a 5-year design life battery with an actual expected service life of 3 years. Note that while battery Unit #1 still has good ohmic readings, semiannual measurements show Unit #2 failing prematurely. For this case, it is desirable to replace both units at the same time. If one unit fails at 2½ years, it is likely the second unit will fail in one of the next semiannual tests. Full replacement ensures that all units will “float” together. One exception might be when a unit fails in the first year.

**Figure A.14.4.3.2 Example Ohmic Trend Analysis for a 24-Volt Battery Made Up of Two 12-Volt Units.**




Ohmic testing can be a safe, simple, accurate, and reliable means of determining the state of health of VRLA batteries. It is important however to understand the following basic guidelines in order to maximize the benefits and avoid possible misleading test results:

(1) Follow safety regulations: wear eye protection and remove metal jewelry, and so forth prior to working with batteries.

(2) Conduct a visual inspection prior to testing. A cracked case, leaking terminal or post, or bulging battery should be replaced, not tested.

(3) Temperature changes affect measured ohmic values and battery capacity. Ohmic measurements should be taken at 77°F (25°C) ±13°F (7°C).

(4) For maximum accuracy and consistency, batteries should be tested when in a fully charged state.

(5) Check the battery charging current prior to test. The charging current should be stable and be within the normal float current recommendations of the battery manufacturer for the battery model. If it is not, it is likely that the batteries have recently been discharged and a test is not appropriate until this float current stabilizes.

(6) Whenever possible, ohmic readings should be taken each time with the same instrument, but as a minimum with the same model. Changing models will skew the data and require re-establishing the baseline.

(7) When test equipment is provided with an alert, set the ohmic baseline and/or thresholds prior to beginning the test to provide an indication of any deviations from baseline.

(8) It is essential to take ohmic measurements at the battery terminal or post. For consistency and accuracy, subsequent tests should always have probes or clamps placed at the same point while avoiding battery hardware such as bolt heads or washers. Connecting on the hardware will influence the readings and could cause replacement of a healthy battery.

(9) Maintain good contact at the test point for the duration of the test. If the probe or clamp slips off during the test, an incorrect reading will result.

(10) For batteries with fully insulated quick disconnect connectors, the battery should be taken offline by removing the quick disconnects from the battery terminals and then measuring and recording the internal ohmic value of the battery.

(11) Do not condemn a battery based upon results of a single test without any trending data or an established baseline for that specific battery.

(12) When one or more units in a battery falls outside the acceptable range from baseline, replace the entire string.

(13) While testing online is the preferred method, it should be noted that the capability of ohmic meters varies. As such, the test equipment manufacturer might provide instructions to disconnect the battery and test offline. A battery tested online can display a different value than when tested offline due to the charger circuit and load being across the battery. Always test the same way, either online or offline, to have consistent and meaningful results. When ohmic testing is performed online, a change in current occurs due to the ohmic test set signal that could impact battery voltage readings. Because battery float voltage is directly tied to float current, the sum of the voltages of each battery cell/unit have to equal the charger float voltage of the battery string. If a load is applied from the ohmic test set that depresses one cell/unit, then the others have to rise somewhat to offset it. As ohmic testing progresses through the battery string, each cell/unit gets pulled down by the ohmic test set somewhat, and the charger must boost the string current to maintain the voltage, raising the voltage of the cells/units that have not yet been tested. For this reason, voltage readings should be taken with a voltmeter prior to performing ohmic testing online.

**Table 14.4.3.2 Item 9(5).** Battery capacity is determined by the mass of active material contained in the battery and is a measure of the battery's stored energy. The rated capacity of small VRLA batteries used in fire alarm or signaling system applications is typically measured in ampere-hours (Ah) where the ampere-hour rating is based on the battery's capability to provide a constant current at the nominal battery voltage for 20 hours. The rated capacity might vary from manufacturer to manufacturer.

The *actual* battery capacity during service life, often referred to as the state of charge (SOC), can vary significantly from *rated* capacity due to aging, charge and discharge cycles, temperature, and other factors. The unique failure modes of VRLA batteries due to aging and internal degradation are attributed for a high failure rate where the *actual* battery capacity has degraded to 80 percent of the manufacturer's *rated* capacity. As a result, battery manufacturers often recommend replacement much sooner than the rated design life for critical systems.

A test of battery capacity is designed to determine if the battery is capable of continuing to deliver the voltage level specified by the manufacturer. The results of a capacity test can also be used to estimate where the battery is in its service life. A test of capacity is performed by applying a constant current load to the battery based on the manufacturer's

published discharge rates until voltage falls to specified levels. Although discharging the battery for capacity testing concerns some, VRLA batteries are designed to handle numerous discharges within the limits established by the battery manufacturer.

The discharge rate selected for testing should be representative of the battery duty cycle. At shorter test times, the test duration has a greater effect on the capacity calculation. For example, a 1-minute difference in actual test time for a 5-minute discharge rate compared to a 3-hour discharge rate will result in a greater deviation of the calculated capacity. The battery is also operating less efficiently at shorter discharge rates and the effects of aging and degradation might not be as prevalent during shorter discharges.

Fire alarm or signaling system loading is typically insufficient for the practical application of a battery load test because the system load cannot be varied to maintain a constant current equal to the battery manufacturer's published discharge rates. The fixed load applied by the system will result in final voltage levels that are deceptively high. Battery sizing is also a factor. The calculated system loads for the battery duty cycle (e.g., 24 hours standby followed by 5 minutes in an alarm) will rarely align with published discharge rates necessary for load testing. In many applications where the battery size is large in comparison to the required system current, the system loading could be too small to accurately determine battery capacity. In these cases, a battery near failure could conceivably satisfy the low discharge rate applied by the fire alarm or signaling system.

In order to satisfy the load test requirements of Table 14.4.3.2, battery capacity testing can be performed in the following manner or in accordance with other methods such as those identified in IEEE 1188, *Recommended Practice for Maintenance, Testing, and Replacement of Valve-Regulated Lead-Acid (VRLA) Batteries for Stationary Applications*:

(1) Referring to the battery manufacturer's specifications, determine the load current for the 3-hour battery rating to the selected end voltage, typically 1.67 volts per cell (10.2 volts for a 12-volt system or 20.4 volts for a 24-volt system).

(2) Record the battery temperature at the negative terminal.

(3) Disconnect the charger and connect a load bank to the battery terminals.

(4) Apply the constant current specified for the 3-hour rate to the battery. Once the constant current is applied, continue the test until the battery terminal voltage decreases to the specified end voltage.

(5) Stop the test when the selected end voltage is reached.

(6) Record the actual test duration in minutes.

(7) Disconnect the load bank and reconnect the charger.

(8) Calculate percent battery capacity as follows:

$$\%\,\text{capacity} = \frac{T_{actual}}{180 \times K_T} \times 100 \qquad \textbf{[A.14.4.3.2]}$$

where:

$T_{actual}$ = the test duration in minutes

$K_T$ = the temperature correction factor for the actual battery temperature at the start of the test from Table A.14.4.3.2. Additional temperature correction factors can be obtained from IEEE 1188.

(9) Replace the battery if the battery capacity is less than or equal to 80 percent. Replace the battery at the next scheduled test interval if the battery capacity is less than 85 percent.

Table A.14.4.3.2 Temperature Correction Factors

| Temperature | | $K_T$ |
|---|---|---|
| °F | (°C) | |
| 65 | 18.3 | 0.92 |
| 66 | 18.9 | 0.927 |

| Temperature | | $K_T$ |
|---|---|---|
| °F | (°C) | |
| 67 | 19.4 | 0.935 |
| 68 | 20 | 0.942 |
| 69 | 20.6 | 0.948 |
| 70 | 21.1 | 0.955 |
| 71 | 21.7 | 0.96 |
| 72 | 22.2 | 0.97 |
| 73 | 22.8 | 0.975 |
| 74 | 23.4 | 0.98 |
| 75 | 23.9 | 0.985 |
| 76 | 24.5 | 0.99 |
| 77 | 25 | 1 |
| 78 | 25.6 | 1.002 |
| 79 | 26.1 | 1.007 |
| 80 | 26.7 | 1.011 |
| 81 | 27.2 | 1.017 |
| 82 | 27.8 | 1.023 |
| 83 | 28.3 | 1.03 |
| 84 | 28.9 | 1.035 |
| 85 | 29.4 | 1.04 |
| 86 | 30 | 1.045 |
| 87 | 30.6 | 1.05 |
| 88 | 31.1 | 1.055 |
| 89 | 31.6 | 1.06 |
| 90 | 32.2 | 1.065 |
| 95 | 35 | 1.09 |
| 100 | 37.8 | 1.112 |

As a good practice, a new battery should be fully charged and then load tested following the battery manufacturer's recommendations prior to installation. A new fully charged battery should have a capacity of at least 90 percent.

**Table 14.4.3.2, Item 17.** Where the manufacturer publishes limits of accuracy for the operation of an initiating device, the test method should verify actuation is within the tolerances provided.

**Table 14.4.3.2, Item 17(10)(b).** See A.17.19.2.2.2.

**Table 14.4.3.2 Item 22(1) and 22(2).** If, during the course of the periodic test of audible appliances, it is suspected that alarm sound levels could be lower than the required minimum, the system owner or the system owner's designated representative should be notified in writing. Such notification will allow the building owner or designated building representative to determine whether sound pressure level readings should be taken for the area(s) in question.

**Table 14.4.3.2, Item 24.** The extent of testing of a fire alarm or signaling system, including devices that were not tested, should be documented in accordance with the test plan in 14.2.10. *NFPA 72* does not require testing of an emergency control function, such as elevator recall, but does require testing of the emergency control function interface device, such as the relay powered by the fire alarm or signaling system. Where the emergency control function is not being tested concurrent with the fire alarm or signaling system testing,

measurement of the emergency control function interface device output should be verified using the proper test devices. This might require reading or observing the condition of a relay, a voltage measurement, or the use of another type of test instrument. Once testing is complete, verification that any disabled or disconnected interface devices have been restored to normal is essential, and this verification should be documented in the testing results.

Testing of the emergency control functions themselves is outside of the scope of *NFPA 72*. A complete end-to-end test that demonstrates the performance of emergency control functions actuated by the fire alarm or signaling system might be required by some other governing laws, codes, or standards, or the authority having jurisdiction. In that situation, other applicable installation standards and design documents, not *NFPA 72*, would address testing and performance of the emergency control functions. NFPA 4 provides requirements for integrated (end-to-end) system testing.

It is important to note that the appropriate NFPA standard would provide the acceptance criteria for the overall emergency control function operation requirements, including performance and test methods, while *NFPA 72* covers the required performance and testing of the emergency function interface device.

For instance, if an end-to-end test for a building with an engineered smoke control system is required by some other governing laws, codes, standards, or the authority having jurisdiction, the test protocol would have unique criteria for the smoke control system design, and a special inspector would be responsible for the overall operation and performance of the smoke control system in accordance with the appropriate standard (NFPA 92 and NFPA *101*) during the testing, including measuring pressure differentials and ensuring proper fan and damper operation. Refer to the following extract from NFPA *101* on smoke control:

**9.3.2 System Design.** The engineer of record shall clearly identify the intent of the system, the design method used, the appropriateness of that method ~~used~~, and the required means of inspecting, testing, and maintaining the system. [***101*:**9.3.2]

**9.3.3 Acceptance Testing.** Acceptance testing shall be performed by a special inspector in accordance with Section 9.13. [***101*:**9.3.3]

Even though the fire alarm or signaling system initiating device might actuate the smoke control system, the actual testing of the dampers and fan operation would be as required by the smoke control design and not part of the fire alarm or signaling system.

Other emergency control operation requirements might be as follows: For fan shutdown and smoke damper operation, the fan and damper operations would be in accordance with NFPA 90A and NFPA 105 respectively, and those equipment operations would be verified by those responsible for HVAC systems in combination with the fire alarm system personnel. Guidance for elevator inspection and testing can be found in ASME A17.2, *Guide for Inspection of Elevators, Escalators, and Moving Walks*. For elevator systems, the recall function, elevator power shutdown, and hat illumination would be done with the elevator mechanics present during the test. This operational test is often accomplished during routine periodic fire alarm testing. For fire door holder and fire shutter release, it would be expected that the emergency control function operation of the doors/shutters would be verified in accordance with NFPA 80 and NFPA *101* during the test. In some cases, the door manufacturer representative might need to be present to reset the equipment.

## Supplemental Information

| File Name | Description | Approved |
|---|---|---|
| Chapter_14_Table_14_4_3_2_SR-5051.docx | Chapter_14_Table_14_4_3_2_SR-5051 | |

## Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 16:20:18 EDT 2023

## Committee Statement

**Committee Statement:** This revision adds clarification for the operation of new technology for low pressure dry pipe and preaction valves regarding the supervisory pressure setting.

**Response Message:** SR-5051-NFPA 72-2023

Public Comment No. 205-NFPA 72-2023 [Section No. 14.4.3.2]

Public Comment No. 207-NFPA 72-2023 [New Section after A.14.3.2]

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles
Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.

Rawson, Christopher

Scibetta, Joe

Slattery, Michael J.

Soverino, Timothy M.

Stormer, Charles K.

Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel

No further comment

Murphy, James

Agreed

## Second Revision No. 5045-NFPA 72-2023 [ Section No. 14.4.10 ]

**14.4.10** In-Building Emergency ~~Radio Communication~~ Responder Communications Enhancement Systems~~.~~ (~~SIG-ECS~~ ERCES ).

In-building emergency ~~radio communication~~ responder communications enhancement systems (ERCES) shall be inspected and operationally tested in accordance with ~~the requirements of~~ NFPA 1225.

Detail SR-5046

**14.4.10.1**

Supervisory signals for in-building ERCES monitored by a fire alarm system in accordance with 24.9.1 shall be tested in accordance with item 20 of Table 14.4.3.2 .

## Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 13:07:28 EDT 2023

## Committee Statement

**Committee Statement:** This revisions changes the name of Emergency Radio Communication Systems to Emergency Responder Communications Enhancement Systems (ERCES) to match the naming convention from NFPA 1225.

**Response Message:** SR-5045-NFPA 72-2023

Public Comment No. 28-NFPA 72-2023 [Section No. 14.4.10]

Public Comment No. 245-NFPA 72-2023 [Section No. 14.4.10]

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles

Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel
No further comment
Murphy, James
Agreed

## Second Revision No. 5047-NFPA 72-2023 [ New Section after 14.4.12.3 ]

**14.4.13** Restricted Audible Mode Operation (RAMO) Notification.

Where RAMO notification is used in accordance with 18.4.8 , annual testing shall include the following:

(1) The ambient and maximum sound pressure levels in the protected space shall be recorded and compared against the RAMO design documentation.

(2) RAMO areas shall be reviewed to determine if the occupancy has changed.

**14.4.14** Maximum Public Mode Audible Levels.

Where maximum public mode audible levels are used in accordance with 18.4.1.9, annual testing shall include the following:

(1) The ambient and maximum sound pressure levels in the protected space shall be recorded and compared against the design documentation required by 18.4.1.9.

(2) Each area where the public mode sound pressure level has been reduced shall be reviewed to determine if the application has changed.

## Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 13:26:28 EDT 2023

## Committee Statement

**Committee Statement:** Annual testing requirements should be located in Chapter 14. These two new sections include testing frequency requirements for RAMO and Maximum Public Mode Audible Levels.

**Response Message:** SR-5047-NFPA 72-2023

Public Comment No. 247-NFPA 72-2023 [New Section after 14.4.12.3]

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
22 Affirmative All
3 Affirmative with Comments
1 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles

Biggs, John CC

Bloodworth, Anthony

Carlson, Scott D.

Chavez, Louis

Chenoweth, Franklin

Coffelt, Jack P.

Corrin, Scott D.

Heffernan, Rick

Hurst, Jr., Herbert B.

Isemann, Bill

Kerr, J. David

Kirtley, Brian Patrick

Kistner, Ariana

Kleintop, E. J.

McDonald, Joshua P.

Pothier, Katherine A.

Rawson, Christopher

Slattery, Michael J.

Soverino, Timothy M.

Stormer, Charles K.

Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel

No further comment

Murphy, James

Agreed

Scibetta, Joe

I see the value of this additional testing language in Chapter 14. Yet, it's regrettable that we'll need to be working backwards now on the next revision cycle to get these terms (introduced into Chapter 18) defined in Chapter 3. How this got into the Second Draft without corresponding definitions is very puzzling.

**Negative with Comment**

Larrimer, Peter A.

There was no technical substantiation to mandate annual testing of restricted audible mode operation (RAMO) notification. Having to compare the sound pressure levels on an annual basis to design drawings is not justified in a minimum standard for such a small population. To mandate annual testing results to those captured at the original design effectively makes this a retroactive requirement

to update the system possible every year when issue are identified during annual testing. There has to be a better way.

## Second Revision No. 5048-NFPA 72-2023 [ Section No. A.14.6.1.1 ]

### A.14.6.1.1

Examples of acceptable methods used to define the required sequence of operations and to document the actual sequence of operations include a logic diagram *[see Figure A.14.6.1.1(a)]* and an input/output matrix *[see Figure A.14.6.1.1(b)]*. The required and actual sequence of operation should include all applicable items found in the list in A.7.4.9 .

**Figure A.14.6.1.1(a) Typical Logic Diagram.**

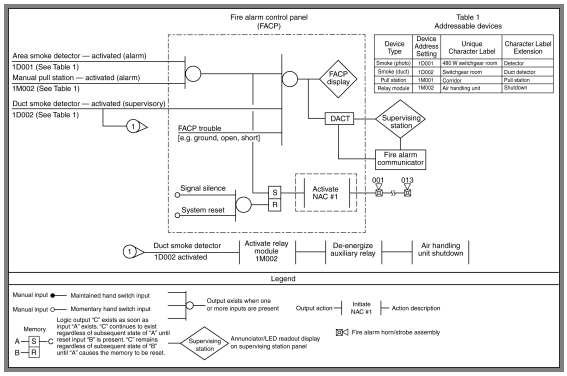
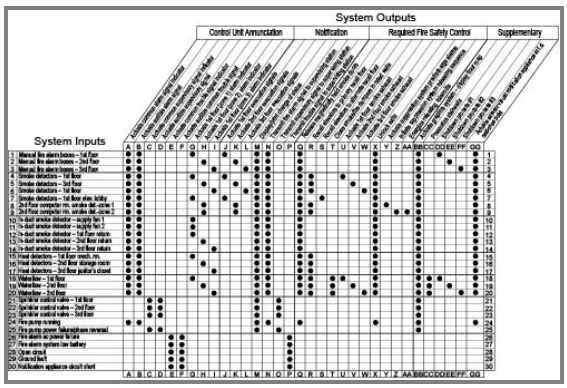



**Figure A.14.6.1.1(b) Typical Input/Output Matrix.**




## Submitter Information Verification

**Committee:** SIG-TMS

**Submittal Date:** Tue Jul 18 13:38:49 EDT 2023

## Committee Statement

**Committee Statement:** A.14.6.1.1 is referenced by both A.7.4.9 and A.7.5.5.2 for an example of the sequence of operation matrix. It is critical that the Owner receives a copy of the sequence of operation that is actually programmed into the fire alarm system. As such, this revision points to a detailed list is in Chapter 7 and should be referenced in this Annex material so reference is made back to this inclusive list. The “Typical Input/Output Matrix” shown as an example is not all inclusive of everything that should be documented.

**Response Message:** SR-5048-NFPA 72-2023

Public Comment No. 76-NFPA 72-2023 [Section No. A.14.6.1.1]

## Ballot Results

✔ **This item has passed ballot**

27 Eligible Voters
1 Not Returned
24 Affirmative All
2 Affirmative with Comments
0 Negative with Comments
0 Abstention

**Not Returned**

Brockett, Charles E.

**Affirmative All**

Berra, Charles
Biggs, John CC
Bloodworth, Anthony
Carlson, Scott D.
Chavez, Louis
Chenoweth, Franklin
Coffelt, Jack P.
Corrin, Scott D.
Heffernan, Rick
Hurst, Jr., Herbert B.
Isemann, Bill
Kerr, J. David
Kirtley, Brian Patrick
Kistner, Ariana
Kleintop, E. J.
Larrimer, Peter A.
McDonald, Joshua P.
Pothier, Katherine A.
Rawson, Christopher
Scibetta, Joe
Slattery, Michael J.
Soverino, Timothy M.
Stormer, Charles K.
Stroud, Brad

**Affirmative with Comment**

Morrin, Jr., Daniel

The examples below should be or, not and. This avoids confusion that BOTH are required. To be written as: A.14.6.1.1 Examples of acceptable methods used to define the required sequence of operations and to document the actual sequence of operations include a logic diagram [see Figure A.14.6.1.1(a)] OR an input/output matrix [see Figure A.14.6.1.1(b)]. The required and actual sequence of operation should include all applicable items found in the list in A.7.4.9.

Murphy, James

Agreed

California Automatic Fire Alarm Association, Inc.

TEL: (888) 607-5959

www.cafaa.com

# 2024 Board Slate

**CALIFORNIA AUTOMATIC FIRE ALARM ASSOCATION**
**(CAFAA)**
**PO Box 1459**
**Fremont, CA 94538-0013**
**888.607.5959**

# PROPOSED 2023 CAFAA BOARD OF DIRECTORS SLATE

**As CAFAA's Immediate Past President, Jay Levy is the Chairperson of the Nominating Committee for the CAFAA Board of Directors.**

**He has advised the current board that there will be a change to the current slate.**

**The proposed slate for the 2023 Board of Directors will be presented to the membership present at the Annual Meeting on Feb. 01, 2023 in Palm Springs, CA.**

**Nominations for the Officers and Directors will be opened to the voting membership at that time.**

**The voting members at the Annual Meeting will elect the 2023 CAFAA Officers and Directors by a majority vote. The newly elected board will serve until their successors are elected at the following year's Annual Meeting.**

# The proposed 2023 CAFAA Board of Directors slate

## OFFICERS

| | | |
|---|---|---|
| President | Joel Reitz | Sabah International |
| VP-SoCal | John Maitrejean | Siemens Industry |
| VP-NorCal | Daniel Tate | Intrepid Electronic Systems |
| Secretary | Joseph R. Cervantes, Sr. | Space Age Electronics |
| Treasurer | Frank Alvernaz *** | Helix Electric |
| Immediate Past Pres. | Jay Levy | Saf-Com Supply |

## DIRECTORS

| | | |
|---|---|---|
| Director | Curtis Streeter | Deep Blue Integration |
| Director | Jon Kapis | Coffman Engineers |
| Director | John Bennett | Bennett Fire & Security |
| Director | Kevin Green | Pyro-Comm Systems |
| Director | Kirk Greenwood | Johnson Controls, Inc. |
| Director | Sean De Friese *** | Bilcor |
| Director | Queen VL Gonzalez *** | Integrated Fire Systems & Solutions |

*** new Officer or Director

California Automatic Fire Alarm Association, Inc.

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# Guest List