National Emergency Alert System (EAS) Test Discussion

8 June 2011

Discussion Topics

- We hope that in today's discussion, you will have a better understanding of the:
  - Emergency Alert System (EAS)
  - Purpose and importance of testing the EAS at the National, State and local levels
  - Major EAS Test activities and accomplishments to-date
  - Alaska EAS Test and Virgin Islands EAS-CAP Demonstrations
    - Outreach and lessons learned
    - Technical and operational observations
    - Identified mitigation strategies
    - Test and Demonstration Reviews
  - Next Steps and Participation

About the EAS

- The EAS was established in 1994 as a replacement for the EBS. The FCC began enforcing EAS rules in 1997.
- The EAS is the backbone of alert and warning. It reaches more people in more places from a single alert origination.
- It is extremely valuable in rural communities and important in post-disaster situations. Due to its resiliency, the EAS is expected to operate when other communication pathways are inoperable.
- The system must be in a state of readiness at all times. NOAA NWR, Territorial, State, and local governments use the EAS regularly, however the President has never activated the national-level EAS, nor has there ever been a nationwide Test.
- The EAS Test will also exercise the pathways used by NOAA, Territorial, State and local governments.
- It is important to remember that the Common Alerting Protocol (CAP) does not replace the EAS. EAS message will be transported over IP by CAP.

About the EAS

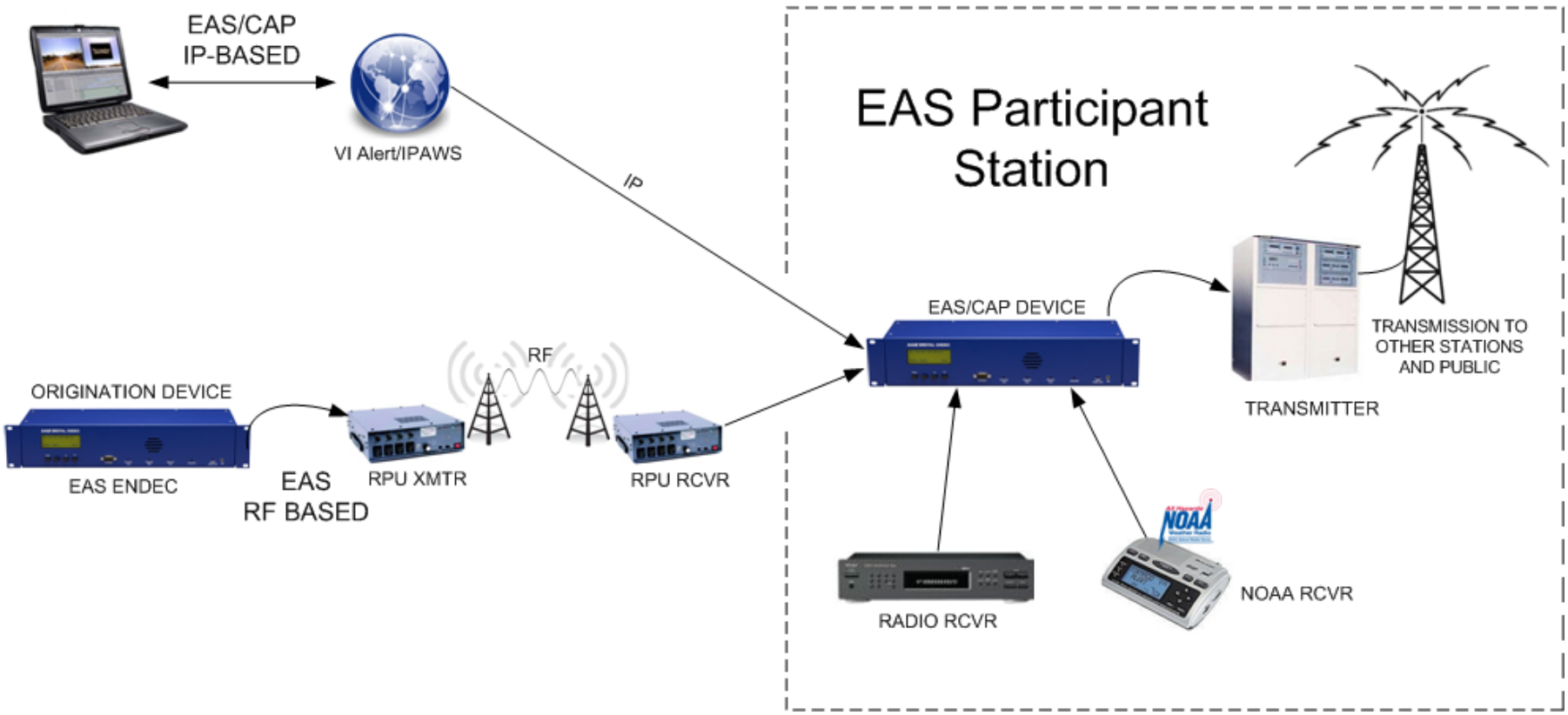
- The EAS is not the only tool in the alert and warning toolbox. It is, however, one of the easiest to use, accessible, and resilient.

- Why use it? A single alert message using the EAS can reach millions, providing specific lifesaving information. After a disaster, the EAS has proven it's resiliency as many participants continue to operate.

- Most EAS participants are eager to support Local, State, and Federal authorities in the dissemination of alerts using the EAS. Many are concerned that some State authorities have not understood this important tool.

- FEMA IPAWS is working with several States and Territories to establish and improve the EAS.

Alerts and Warnings Using EAS and CAP to Radio, Television and Cable



Purpose of the EAS Test

- Assess the readiness and effectiveness of the EAS from origination to reception by the public.
- Assess real-world EAS distribution networks and monitoring assignments, transmission issues, FCC rules, equipment interoperability and functionality.
- Establish a comprehensive baseline for more effective preparation and execution of future tests (both traditional EAS and EAS-CAP).
- Establish effective mitigation approaches to improve the EAS.
- Implement and assess EAS participant, industry, State and local government, and public outreach and engagement activities.

It is important to note that the first EAS Test will not incorporate testing of CAP capabilities

Major EAS Test Activities and Accomplishments (AK & VI)

- Drafted an EAS National-Level Test and Assessment Plan to provide guidance during the execution of the Tests; Updated and continue to improve EAN origination procedures. These procedures are being tested between FEMA and the Joint Interoperability Test Command (JITC).

- Conducted two EAS tests using a live-code EAN (2010 and 2011).

- Conducted EAS participant outreach in Alaska and the Virgin Islands. Important partners, including the ADHS, PEP station, the ABA, VITEMA, V.I. Office of the Governor, and other entities were engaged. Alaska EAS Participants were enthusiastic in their support of the first and second Alaska EAS Test and a future national test.

- Conducted public outreach in Alaska and the Virgin Islands. Released timely PSAs. Responded to media requests; conducted interviews, assisted in the drafting of news releases as requested.

- Developing EAS Equipment Preparation Instructions; worked with participants to ensure proper setup of EAS devices.

Major EAS Test Activities and Accomplishments (AK & VI)

- More EAS participant stations transmitted the EAS Test message in 2011 to more people compared to the previous Alaska test in 2010. This tells us that the EAS can be improved when properly tested and exercised.
- Established a strong baseline for more effective preparation and execution of an end-to-end national test.
- Increased cooperation and partnership between the State, EAS Participants, manufacturers
- More robust pre-Test exercises and dry-runs better informed EAS Participants.
- Conducted numerous EAS outreach and mini-workshops to EAS Participants at the National Association of Broadcasters (NAB) Show, and numerous State broadcasters association meetings, Society of Broadcast Engineers Chapters, and others.

Alaska EAS Test Outreach and Messaging- Public Service Announcement

– The PSA Script was created in close coordination with the Alaska Broadcasters Association (ABA) and FEMA IPAWS. The ABA and the AK Division of Homeland Security were essential in securing the support of Senator Lisa Murkowski for the announcement, as well as the production of the PSA.

V.I. Tsunami Exercise with EAS Live-Code Alert

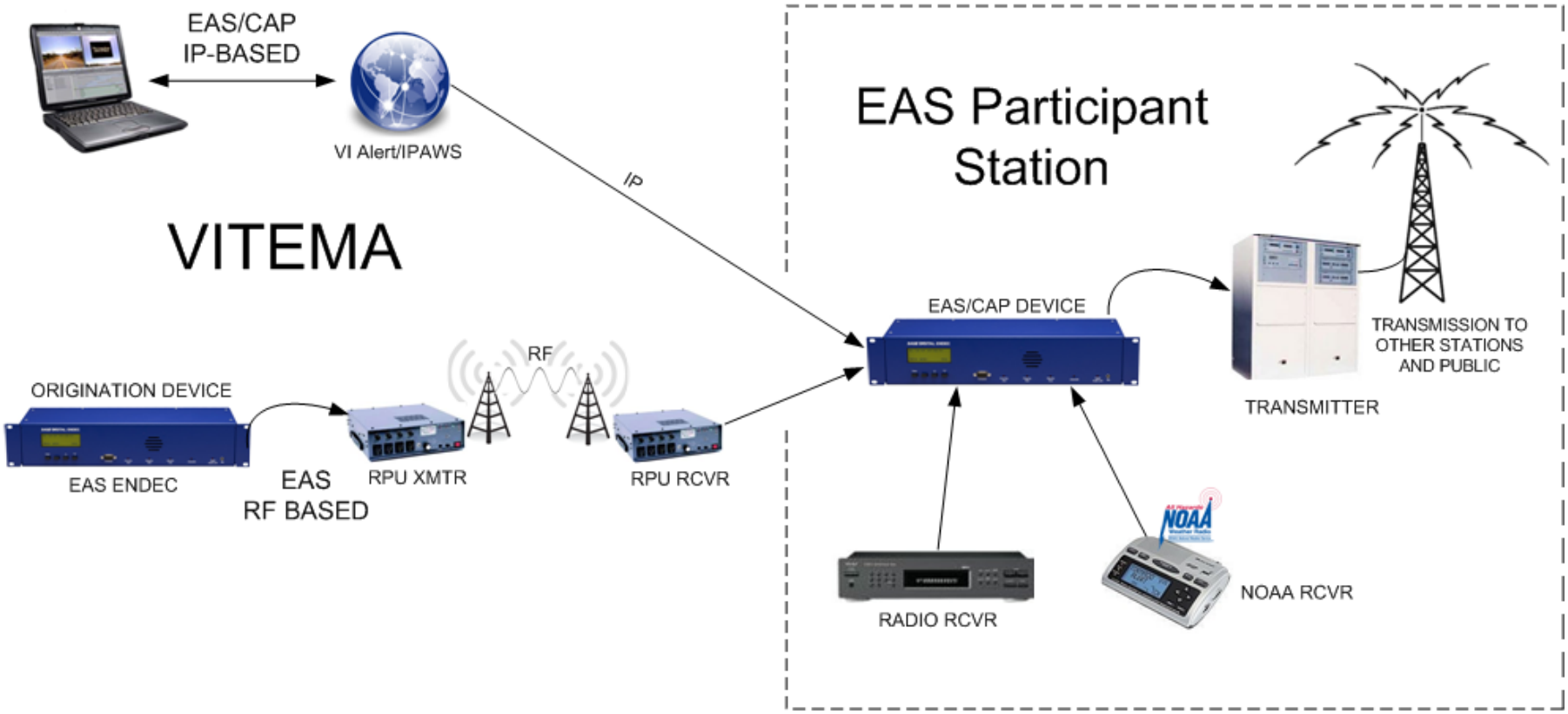
- On Wednesday March 23, the Virgin Islands (VI) joined other localities in the Caribbean basin as a participant in a tsunami response exercise designed to evaluate local response plans, alerting, increase preparedness, and improve coordination throughout the region.

- The exercise, titled CARIBE WAVE 11/LANTEX 11, simulated a widespread tsunami warning throughout the Caribbean which required implementation of local tsunami response plans and public notification through the Emergency Alert System (EAS).

- The exercise simulated a major earthquake and tsunami generated within the VI and PR coastal waters. At approximately 9:03 a.m. on March 23, NOAA and the territory's broadcasters tested the EAS using a live Tsunami Warning Code (TSW). The test determined the effectiveness and readiness of authorities and EAS participants to warn the public in the event of a major disaster.

- The EAS portion of the Exercise lasted approximately two minutes. Participating EAS participants/broadcasters tuned to NOAA National Weather Radio to receive the EAS message for device activation at their stations.

Alerts and Warnings Using EAS and CAP to Radio, Television and Cable

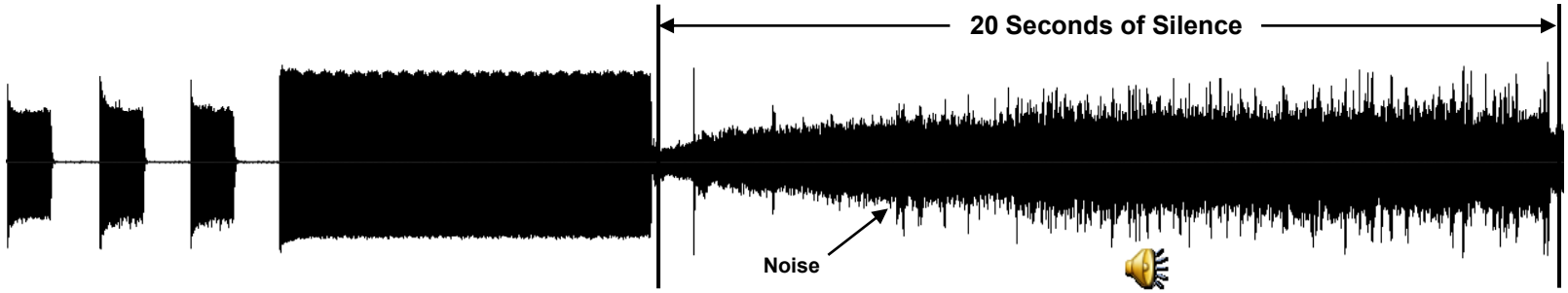


2010-2011 Alaska EAS Test Problems and Mitigation

- Summary of identified problems (2010 Exercise) and mitigation results:
  - Incorrect ORG Code Used — Corrected
  - Main Cable Head End did not Air the EAN — Corrected
  - Origination Procedures — Corrected
  - Monitoring Assignments — Needs Some Improvement
  - Low Audio Quality & Amplitude — Improved – Needs More Improvement
  - Text Crawl Inconsistencies — Future Rulemaking
  - Use of Washington DC FIPS Code — Future Rulemaking
  - Duplicate EAN Broadcasts — Improved – Future Rulemaking
  - EAS Device Installation Training — Improved/Ongoing
  - DTV (video/audio switching) & Subchannel — Future/Ongoing

Issues and Mitigation – Federal Origination Procedures

- Significant “dead air” was observed between the EAN headers and the initial announcement cueing the announcer.



- FEMA will improve procedures from origination of the National message to delivery to PEP stations. Training and exercises at the Federal origination level will improve the timing and cueing of the messages, and eliminate dead-air.

Issues and Mitigation – Audio Quality

- FEMA began steps to drastically improve the audio delivered to the PEP stations by way of a new PEP Satellite Network.
- The PEP Satellite Network will include all CONUS and OCONUS PEP stations, and will include:
  - Delivery of broadcast quality audio
  - Real-time telemetry from the PEP stations
  - Ability to deliver the EAN faster
- The PEP Satellite Network is in the test and early deployment stages.
- Best practices outreach and rulemaking may help mitigate audio problems between participants. For example, best practices can help reduce problems with reception by proper tuning of radio receivers, audio phasing, proper adjustment of levels, etc.

Issues and Mitigation – Monitoring Assignments

- Some EAS participants were unable to transmit the EAN when their single source failed to relay. In most cases other sources were available to the EAS participants.
- The ABA and State of Alaska, through the Alaska EAS Plan, have provided clear and concise information on EAS monitoring, however, it is possible that some confusion may have occurred regarding EAS monitoring.
- Monitoring more than one EAS source eliminates single points of failure. Robust EAS participant outreach and engagement activities will help EAS participants understand the need to have redundancy in EAS monitoring.

Example of a Typical EAS Receiver

- In some cases, especially in remote locations, only one EAS source is available for monitoring. It is important for EAS participants to coordinate with State and local authorities so that any limitations are mitigated.

Issues and Mitigation – EAN Crawl

- Significant EAN text crawl inconsistencies were observed. These included differences in:
  - Speed
  - Duration
  - Colors
  - Size
  - Content
- A better understanding of video crawl mechanisms is necessary. FEMA and FCC will request feedback from industry to find solutions. FEMA is researching crawl at the IPAWS Lab at JITC to support improved understand and mitigation.
- EAS Rules need to be more specific on the use of the EAS crawl.

Issues and Mitigation – EAN Crawl

Issues and Mitigation – EAS Device Installation and Operation

- Many issues were due to installation, configuration, and operation of EAS devices:
  - Monitor source selection, redundancy, tuning and wiring
  - Text crawl generator programming, language settings speed, duration, color and size.
  - Background image selection and switching
  - Audio attenuation, impedance, and phasing
  - Programming of input and output audio switching
  - Inoperable equipment
- FEMA and the FCC are partnering to promote technical best practices in the operation and maintenance of EAS devices.

Issues and Mitigation – DTV, Satellite, Cable Operations

- Cable forced tuning issues were observed during the Test:
  - In 2010, the largest cable provider in Alaska was unable to air the EAN. This was due, in part, to an improper ORG Code being used in the EAN. This problem was mitigated in 2011.
  - During the 2011 EAS Test, forced tuning issues were observed. Some cable receivers were unable to keep the EAN on the air.
  - A major cable company in AK reported that other head ends throughout the State were unable to air the EAN for a variety of reasons, including inter facility links not operating properly.
- Some TV participants did not air the EAN over their secondary channels. This may be due to video routing and switching or other configuration issues.
- FEMA is working with the cable industry to better understand how the EAS works within the cable television environment. In television (cable, terrestrial TV, satellite TV), it is necessary to use additional equipment not mentioned in EAS Rules. The use of this external equipment impacts how the EAS is presented to the public.

Test Summary

- The main reason why the EAN Test message was either not received or relayed was in large part due to individual and localized technical malfunctions (ex: distribution amplifier failures, APRN did not relay the message due to a malfunctioning power supply, etc.).

- FEMA successfully transmitted a correct EAN to Alaska PEP Station, KFQD.

- EAS operational plans and procedures at the State level should be closely followed by the EAS participants. Some EAS participants only monitor one source.

- Cooperation from EAS participants/broadcast community was excellent, in particular due to the support and cooperation of the ABA and ADHS. The ADHS and the ABA were able to recruit the support of Senators' Murkowski and Begich, and Congressman Young.
  - The support and partnership with the ABA and ADHS was critical.
  - This approach will be used as a model for the end-to-end National EAS Test.

- Active outreach prepared Alaskans for the second EAS Test ,and did not result in any undue public concern. The future EAS Test must include appropriate Federal, State and local public awareness campaigns.

Test Summary

- Preliminary Results show 81% of (96 of 119) EAS participants aired the EAN throughout Alaska.
- 81% of 21 LP-1s relayed the EAN. Four LP-1s did not for reasons below:
  - 2 monitored APRN which suffered a power supply malfunction (corrected after the Test)
  - 1 experienced a distribution AMP failure (corrected after the EAS Test)
  - 1 failed to relay the EAN. Initial analysis questions an “auto-forward” setting.
- The EAS participants in Alaska’s main population center, Anchorage, are not dependent on a satellite relay. Initial indications show that 94% of the monitored EAS participants in Anchorage aired the EAN.
- Five LP-1s monitoring KTVA experienced “locked” EAS devices. Station engineer returned station to HD before End of Message (EOM) headers were sent resulting in the lock-up. Corrective actions were immediately taken by Test Controllers to return stations to normal broadcasting.

Lessons Learned

- Testing is critical to incremental improvement of our national alert and warning capabilities. These Tests prove that the EAS works and can be improved upon.
- Positive and effective outreach efforts to EAS participants in Alaska and the Virgin Islands resulted in improved communication at the Federal, Territorial, State, and local level.
- Effective public outreach successfully avoided undue public concern for the Alaska EAS Test and V.I. EAS-CAP Demonstration.
- EAS participants are willing to cooperate in testing and improvements of the EAS
  - i.e. ABA preparation of participants, EAS workshop
- Procedures and rules at the Federal, State, and local levels require additional updating. There are broad technical implementation issues associated with the interpretation of FCC Part 11.
- EAS participants require additional training and guidance on EAS device installation, configuration, monitoring, and operation.
  - EAS Handbook, Workshops, Bulletins, Industry blogs/best practices

Next Steps

- Support FCC's EAS Rulemaking process
- Emphasize the need for EAS participants to review monitoring assignments
- Increase training and technical exchange efforts:
  - Continue cooperation with FCC on technical updates
  - Continue training and exercises at the Federal-level.
  - Work with EAS manufacturers to promote understanding of Rules
  - Develop a cable-TV and DTV experimental sandbox at JITC IPAWS Lab
- Plan and host an EAS Workshop at NAB and promote technical "best practices."
- Continue follow-up CAP-EAS Demonstrations in Alaska and the U.S. Virgin Islands.
- Implement extensive EAS education and engagement activities as well as public awareness campaigns to support the National EAS Test.
- Continue operational planning for the Phase III, National EAS Test.

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