

260 m² Live Broadcast Studio System Emergency Plan (Revised Edition)

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Abstract

This paper takes the 260m² live broadcast studio of Anhui Radio and Television Station as an example, introduces the emergency response plan for the live broadcast studio system and the live broadcast workflow, and evaluates the rationality and operability of the plan through emergency drills.

Full Text

Emergency Plan for 260m² Live Broadcast Studio System

Abstract: This paper uses the 260m² live broadcast studio at Anhui Broadcasting Station as a case study to introduce the emergency response plan and operational workflow for live studio systems, evaluating the rationality and feasibility of the plan through emergency drills.

Keywords: live broadcast studio system; emergency plan; video fault; live broadcast workflow

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With the advancement of television production technology and accelerated convergence of all media, competition in the television industry has intensified. To enhance news timeliness and capture the commanding heights of influence and dissemination, live broadcasting has become the normalized transmission mode for news program production, imposing higher safety requirements on television program production. In 2014, the new *Regulations on the Safe Broadcasting Management of Radio and Television* were introduced, with Article 78 of the *Implementation Rules for Television Centers* clearly stipulating: inspection of emergency plan formulation and drill implementation, assessment of operators'

mastery, and evaluation of the rationality and operability of various emergency plans and key operational procedures. This paper elaborates on the design and implementation of emergency plans for live studio systems using our station's 260m² live broadcast studio as an example.

1. Emergency Plan for Live Broadcast Studio System

Our station currently operates four 260m² studios, two of which serve as live broadcast studios. Daily broadcasts include multiple programs across Economic Life Channel (*Economic Vision 1 Time*, *Help Lady*, *First Time*, *News Extension*), Public Channel (*First Scene*, *News Noon Shuttle*, *First News Line*, *Night 60 Minutes*), Science and Education Channel (*Legal Space-Time*), as well as special broadcasts for politics, sports, college entrance examinations, and other events. The heavy live broadcast schedule has provided valuable experience. Since launching in 2013, various faults have occurred, and we have continuously accumulated and summarized practical experience, simplifying and analyzing technical systems to identify critical nodes. By monitoring embedded signals from PGM and listening/watching them, we minimize potential hidden dangers during live broadcasts.

When equipment or system failures occur during live broadcasts, we follow the principle of “emergency response first, troubleshooting second,” activating the emergency plan immediately and handling detailed repairs after the broadcast. All faults must be promptly reported to supervisors and documented. Based on fault location, failures are categorized as broadcast channel faults, internal system faults, or power faults. If the broadcast signal is abnormal but all monitoring and listening in the studio are normal, it is determined to be a broadcast channel fault, and the broadcast center is notified to handle it. If the power supply circuit in the control room rack area fails, causing both power circuits to trip simultaneously, the broadcast center is notified to air filler content.

1.1 Video Faults

Fault Phenomenon (1): Video switcher failure (freeze, button malfunction, no signal from M/E2 PGM). Press the emergency switch and assist the director in using the matrix emergency switching panel while simultaneously pressing the keyer panel button [Figure 1: see original paper].

Fault Phenomenon (2): No signal from main optical transmitter E/O M. If the backup optical transmitter E/O B signal is normal, notify the broadcast center to switch to the backup path; if the E/O B signal is abnormal, notify the broadcast center to air filler content. After troubleshooting, notify the broadcast center that the signal has returned to normal [Figure 2: see original paper].

Fault Phenomenon (3): If the player video fails during broadcast, use PLAY3/EMG PLAY. If problems persist, switch to VTR tape playback.

Fault Phenomenon (4): If a camera fails while its feed is on air, immediately switch to another camera.

Fault Phenomenon (5): If the teleprompter screen fails, switch to the backup teleprompter screen; if the teleprompter host fails, the anchor broadcasts with a paper script.

Fault Phenomenon (6): If the background large screen fails, change camera position and use another large screen as background.

1.2 Audio Faults

Fault Phenomenon (1): If the main audio mixer fails, press the emergency switch and activate the backup mixer.

Fault Phenomenon (2): If the anchor's lapel microphone fails while their voice is on air, immediately push up the backup interface microphone channel.

1.3 Lighting Faults

Fault Phenomenon (1): If the main lighting console fails, directly switch to the backup lighting console.

Fault Phenomenon (2): If the key light fails while the anchor is on camera, the main camera immediately adjusts its aperture while simultaneously turning on the backup key light.

2. Live Broadcast Studio Workflow

To ensure safe and smooth live broadcast operations, establishing good work habits is fundamental in addition to emergency preparedness. We have formulated the *Live Broadcast Operational Workflow* with specific requirements for system power-up, debugging, and handover before broadcast, as well as system power-down and work documentation after broadcast.

All equipment setup and power-up debugging must be completed 40 minutes before the live broadcast begins, testing both main and emergency path operation status. Thirty minutes before broadcast, conduct another test of video/audio signals and communication signals with the broadcast center, synchronize clocks, and hand over video/audio main/backup path signals and return signals. After all preparations are complete, hand over relevant equipment to the program department. Fifteen minutes before broadcast, all position personnel must not leave their posts. Five minutes before broadcast, synchronize clocks again with the broadcast center. At 2 minutes and 1 minute before broadcast, announce the time to all positions via communication equipment. Twenty seconds before broadcast, begin countdown to all positions and the broadcast center via communication equipment (this is performed by the program director with technical staff cooperation). When the broadcast begins, all positions start work. After the broadcast ends, complete handover

with the program department, fill out work records with signatures from relevant personnel, and report any issues promptly. Disconnect relevant power switches in the venue, inspect and recover equipment, clean the area, check for fire hazards, and confirm no safety risks before leaving. Turn off air conditioning and main machine room switches, turn off lights, and lock doors and windows before leaving (generally leave half an hour after power-off). In case of emergencies, organize responses according to relevant situations in the emergency plan.

Live broadcast anomalies are characterized by suddenness, randomness, and uncertainty. To master the handling methods in emergency plans, remain calm under pressure, and ensure safe live broadcast operations, regular emergency drills must be conducted to normalize drill practice, thereby improving staff emergency response and troubleshooting capabilities. We have developed an emergency drill plan: simulating a complete program live broadcast process, artificially setting multiple faults in the video system during broadcast. Video technical staff should take corresponding emergency measures within 6 seconds, then follow steps to check circuits and troubleshoot faults. [Figure 3: see original paper] shows the live broadcast emergency plan drill script.

Emergency drill results demonstrate that the emergency plan possesses rationality and operability, providing strong support for the 260m² live broadcast studio.

3. Emergency Drills

To ensure live broadcast safety and prevent accidents is the top priority of television station work and the sacred duty of all technical position personnel. Every technical staff member must always remember that safety responsibility is weightier than mountains, continuously improving their sense of responsibility, professional competence, and psychological quality to guarantee safe live broadcast operations.

In addition to establishing emergency plans, a *Fault Handling Detailed Rules* document should be formulated to consolidate the experience of seasoned technical staff, documenting both occurred and potential faults with their handling methods. New issues discovered through emergency drills can continuously enrich the content, creating a valuable reference for future consultation.

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Note: Figure translations are in progress. See original paper for figures.

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