



RTCM Paper 086-2018-SC134-005

Radio Technical Commission for Maritime Services

RTCM Background and SC-134 Evolution

*SC-134 Plenary Meeting
Sogei SPA Facilities, Rome, Italy
20 June, 2018*

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Presentation Outline

- **RTCM**
 - Background
 - Special Committees
- **RTCM, a 'Maritime' organization, and SC-134**
 - SC-104 Evolution
- **SC-134 Genesis**
- **Summary**



RTCM – Background

- **Chartered in Washington, DC in 1947**
 - Originally U.S. State Department Advisory Committee
- **Now International, Non-Profit, Scientific, Professional and Educational Organization**
 - Focuses on All Aspects of Maritime Radiocommunications and Radionavigation
 - Develops and Publishes RTCM Standards
- **RTCM Standards are Incorporated by Reference**
 - U.S. Federal Communications Commission and U.S. Coast Guard Regulations
 - Other International Law
- **RTCM Standards used as Basis for Requirements in Standards of the International Electrotechnical Commission (IEC)**
 - Now Mandatory under Chapters IV and V of the International Convention for the Safety of Life at Sea (SOLAS)
- **RTCA is a sister to RTCM**



RTCM – Structure

- **Board of Directors (BoD)**
 - Experience in Wide Sectors of RTCM Interest
 - e.g., Retired USCG Rear-Admiral, CEOs of Marine Radio Companies, GDMSS, Integrity, Personal Locator Beacons, GNSS
- **Employees**
 - President [full time]: Bob Markle (Acting), Ed Wendlandt (mid to late summer)
 - Part Time administration and support: currently 3 interns
 - All others are volunteers: i.e., BoD, Special Committee Chairs and Secretary
- **Special Committees**
 - See next slide
- **Income Sources**
 - Membership Dues (primary source)
 - Annual Meeting and Assembly
 - Document Sales
 - Special Advisory Contracts: e.g., the RTCM GDMSS Task Force.
 - Miscellaneous donations



RTCM – Special Committees

- **Address In-depth Radiocommunication and Radionavigation Areas of Concern**
- **Develop and Publish RTCM Standards**
 - Routinely Update Publications
 - Reflecting Recent Technology Changes
- **Special Committee Outputs: Reports and Standards Widely Accepted**
 - Voluntary
 - Mandatory (i.e., Incorporated into Law or Policy)
- **Chaired by Subject Expert**
 - Appointed from RTCM Member Organizations
 - Approved by RTCM Board of Directors



RTCM – Special Committees

- Special Committee (SC) 101 on Digital Selective Calling (DSC)
- Special Committee (SC) 104 on Differential Global Navigation Satellite Systems (DGNSS)
- Special Committee (SC) 109 on Electronic Charting Technology
- Special Committee (SC) 110 on Emergency Beacons (EPIRBs and PLBs)
- Special Committee (SC) 112 on Ship Radar
- Special Committee (SC) 117 on Maritime VHF Interference
- Special Committee (SC) 119 on Maritime Survivor Locator Devices
- Special Committee (SC) 121 on Automatic Identification Systems (AIS) and Digital Messaging
- Special Committee (SC) 123 on Digital Message Services over Maritime Frequencies
- Special Committee (SC) 127 on Enhanced Loran (eLoran)
- Special Committee (SC) 128 on Satellite Emergency Notification Devices (SEND)
- Special Committee (SC) 129 on Portrayal of Navigation-Related Information on Shipboard Displays
- Special Committee (SC) 130 on Electro-Optical Imaging Systems
- Special Committee (SC) 131 on Multi-system Shipborne Navigation Receivers
- Special Committee (SC) 132 on Electronic Visual Distress Signaling Devices
- Special Committee (SC) 133 on Data Exchange for Navigation-Related Applications for Mobile Devices



Is RTCM Maritime Only?

- **Common question:**

- Why is RTCM, an apparent maritime-based organization, applicable to non-maritime applications” involved in carrier-based real-time GNSS provider networks, RTK, MAC, FKP, and PPP-like applications?

- **Answer: SC-104 and how it evolved:**

- Originally Maritime Focused (e.g., RTCM 1.0)
 - Focused on Safety Of Life at Sea (SOLAS)
- Non-Maritime Industries recognized interoperability success and began requesting more (e.g., RTCM 2.0 to now RTCM 2.3; now RTCM 3.X, Ntrip, etc.)
- Now most widely used GNSS interoperability standard in modern code and carrier-based real-time applications.
 - Examples: Code only DGNSS, RTK, Non-Physical Reference Stations, MAC, FKP, provider networks, SSR, and Ntrip
 - Numerous Sectors: surveying, construction, marine construction, agriculture, automated agriculture, machine control, oil exploration, deformation/subsidence monitoring, plate tectonics, and many more.



SC-134 Genesis

- **Need of common integrity standard for code/carrier GNSS Applications (i.e., High-end applications)**
 - In a Later agenda item to debate
 - What this really means
 - Committee extent/reach: short, near, long-term.
 - What other technologies to include: e.g., coupled inertial systems.
- **Who are SC-104**
 - Members include GNSS Receiver and Algorithms experts
 - Some residual DGNSS Safety Of Life experts
 - SC-104 WG: Integrity Monitoring for High-Precision Applications
- **Why SC-134 and not SC-104**
 - SC-104 committee is now very large
 - Integrity subject matter too large for SC-104 alone
 - Requires more diverse subject matter experts (SBAS, rail, automobiles, highways, etc.)
 - Other rational detailed in SC-104 Terms Of Reference



SC-134 Meetings and SC-104 Meetings

- **SC-134 Created with Expectation that SC-104 and SC-134 have Adjacent Meeting Dates and Venues**
 - RTCM Board of Directors in Fully Support this Adjacency
 - Common members of SC-104 and SC-134
 - Chair of SC-104 and SC-134
- **Next SC-104 Meeting connected with Intergeo, Frankfurt, Oct. 18-19 2018**
 - Intergeo dates: Oct 16-18 (Tuesday through Thursday)
- **Next SC-134 Possibilities (at Intergeo 2018)**
 - If 2 Days
 - Oct 14-15 (Sunday and Monday: before Intergeo)
 - Oct 15-16 (Monday and Tuesday: Overlap one day of Intergeo)
 - Oct 20-21 (Saturday and Sunday: after SC-104)
 - If 1 Day
 - Oct 15 (Monday: before Intergeo)
 - Oct 20 (Saturday: after SC-104)



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Thank You

- **SC-134 Papers Page: <http://rtcm.info/sc134/>**
- **Thank You**
- **Questions**