

LRIT OPERATIONAL CAPABILITY REQUIREMENTS

1.0 Background

The National Oceanic and Atmospheric Administration (NOAA) is planning to support the migration of its current meteorological direct broadcast services to the new digital formats recommended by two international meteorological organizations, the World Meteorological Organization (WMO) and the Coordination Group for Meteorological Services (CGMS). The United States participates in and supports these two groups to facilitate the efficient distribution of meteorological data from multiple international sources. The new digital formats are intended to improve the quality, quantity, and availability of meteorological data from direct broadcast meteorological satellites.

The current NOAA direct broadcast services are derived from satellite sensor data from NOAA's GOES and POES systems. NOAA's geostationary (i.e., GOES) direct broadcast services include low-rate Weather Facsimile (WEFAX) and high-rate GVAR services. NOAA's polar orbiting (i.e., POES) direct broadcast services include low-rate Automated Picture Transmission (APT) and high rate High-Rate Picture Transmission (HRPT).

The low-rate NOAA geostationary direct broadcast service, WEFAX, will be migrated to the new internationally recognized digital format called Low-Rate Information Transmission (LRIT) over the next 5 to 10 years. NOAA's LRIT services will generally comply with the LRIT Global Specification developed by CGMS (i.e., CGMS Document Number CGMS 03, Issue 2.6, dated August 12, 1999). NOAA will establish two levels of LRIT operational capabilities, the Initial Operational Capability (IOC) and the Final Operational Capability (FOC). The transition between NOAA's LRIT IOC and FOC services will be determined by the evolution of FOC requirements and the associated ground systems.

2.0 LRIT IOC Requirements

NOAA's LRIT IOC requirements include all of the current WEFAX capabilities, functions, and performance. The information data rate, which is required to support these IOC requirements, should not exceed 64 kbps. The information data rate required to support FOC requirements would not exceed 128 kbps.

The current GOES-East WEFAX capabilities and functions can be grouped into four categories:

- WFG GOES (132 – 135) products
- WFX POES (44) products
- NMC-4 (52 – 73) products (i.e., 4-minute products, primarily GMS and Meteosat)
- NMC-5 (59) products (i.e., 5-minute products, primarily National Maritime Center charts)

These products are characterized and summarized by the GOES WEFAX schedules presented in Table 1. These schedules include the projected timing of image and chart transmissions over a typical 24-hour period. Visible and infrared (IR) images are generally transmitted over a four-minute interval; charts are generally transmitted over a five-minute interval. The generation of images and charts is generally continuous.

Table 1. GOES WEFAX Product Summary

System	Visible	Infrared	Images	Water Vapor	Charts	Messages
GOES-East WEFAX Products						
GOES	22	89		24		
POES	14	30				
NWS					59	
Meteosat			68			
GMS						
Other						5
GOES-West WEFAX Products						
GOES	20	88		24		
POES	14	30				
NWS					59	
Meteosat			7			
GMS				40		
Other						5

The IOC requirements will include some improvements in the latency and possible improvements in the diversity or flexibility of products.

Wherever possible, NOAA's LRIT system will comply with the CGMS global specification. Any deviation from this specification must be specifically and clearly justified. NOAA will also consider the 'mission-specific' specifications of the European LRIT satellite, Meteosat Second Generation (MSG), and the Japanese LRIT satellite (MTSAT), as baselines for the GOES LRIT mission-specific specification.

The LRIT transition requirement is to support both the existing WEFAX services and the new LRIT for an extended transition period. The simultaneous provisioning of both services during the transition period may require a modest but acceptable reduction in current WEFAX and new LRIT IOC services.

3.0 LRIT FOC Requirements

LRIT FOC requirements shall include additional improvements (e.g., higher resolution) and additional WEFAX type products. The primary constraint for FOC requirements is the information data rate of 128 kbps. LRIT users and the availability of NOAA resources drive the evolution of FOC requirements.