

## **STATUS OF IMPLEMENTING THE LRIT FORMAT**

---

### **Summary and Purpose of Document**

A Global Specification for Low Rate Information Transmission (LRIT) has been agreed by the Coordination Group of Meteorological Satellites (CGMS). It defines the structure and the formatting of the LRIT files, the processing and transport protocols of all Open System Interconnection (OSI) layers applicable to all geostationary meteorological spacecraft. The GOES direct broadcast service will migrate from the analogue WEFAX transmission to the new digital LRIT format. NOAA has made significant progress in the implementation of the LRIT format on future geostationary meteorological satellites. Representatives from NOAA have met to discuss issues and concerns involving the adoption and implementation of the LRIT format. NOAA has created an LRIT Team to implement the new digital format.

---

Action Requested: None

## STATUS OF IMPLEMENTING THE LRIT FORMAT

### INTRODUCTION

The National Oceanic and Atmospheric Administration has accepted the Low Rate Information Transmission Specification as the new broadcast format for future geostationary meteorological satellites. Transmissions from the future satellites will be broadcast directly via the new digital direct broadcast format, called LRIT. NOAA plans to replace the present analog Weather Facsimile (WEFAX) service provided by the current series of Geostationary Operational Environmental Satellites (GOES) with a new digital service starting with GOES-N. NOAA will continue the analogue WEFAX transmissions through the GOES M.

The LRIT broadcasts will provide the users with additional broadcast services and more imagery data than are available from the analogue WEFAX transmissions. This paper will describe the progress made so far in defining the NOAA's effort for the implementation of the LRIT communications system.

### PROPOSED LRIT BROADCAST FOR THE GOES-N SPACECRAFT

In 1991, CGMS began discussing the possible replacement (evolution) of the current international standard for analog Weather Facsimile (WEFAX) Broadcast Services from geostationary meteorological satellites. During the CGMS XXVI meeting, the digital LRIT and its companion format LRPT were approved by all representatives. Also, at CGMS XXVI, all participants, except for the United States (NOAA), committed to a specific planning date (i.e. satellite and launch date) for implementing the LRIT service. Due to long lead times in the NOAA satellite procurement and development cycle, NOAA was unable to commit to a launch date that would include this service, but NOAA did agree to the LRIT "standard".

During the technical development and coordination of the LRIT, several issues were raised by the WMO as primary concerns from the user community. These issues were;

- Costs of new receiving (antenna, signal processing, etc) and processing equipment.
- Lead times for switching to LRIT service and a transition period.

To start the implementation process, NOAA plans to access the GOES-N capabilities with the LRIT Global Specification. This internal review will re-affirm the resources necessary to implement and operate the LRIT system. Spacecraft specifications will be reviewed to assure the communications subsystem is capable of supporting the LRIT and/or analogue WEFAX. Since NOAA operates a dual satellite constellation, it must be able to operate in either mode.

NOAA plans to distribute the global specifications to industry. Vendors should be officially notified of the US plans to implement the LRIT format. Current WEFAX users will be informed of the new format and provided a transition schedule. Coordination of these plans and activities is the responsibility of the NESDIS' Services Oversight Panel.

NOAA has assembled a team of scientists and engineers to design, implement and operate the LRIT communication system. The LRIT implementation team met in September 1999 to review the LRIT Global Specifications and to develop a strategic plan for implementing the new digital service. It is understood that each GOES spacecraft would transmit either analogue or digital format but not both. As a result NOAA will coordinate with industry and WEFAX users to keep them informed about the new format and changes to the current system. This information will be made available via conferences, web pages, e-mail and user group meetings.

Several issues for implementing the LRIT shall be addressed by NOAA to minimize the impact of transiting from the analogue WEFAX service. Since NOAA has a two spacecraft constellation, it must decide on a strategy for incorporating the LRIT on a single satellite footprint while maintaining the old service on an existing spacecraft.

## THE GENERAL SPECIFICATION

The LRIT Global Specification focuses on the aspects of the direct broadcast systems that are not mission specific. These include the network, physical and data link layers of the specification document. The general specification will allow future systems to provide additional services within the LRIT dedicated band.

This global document provides enough details to allow for the design and manufacture of the receiver systems capable of collecting LRIT data from future geostationary meteorological satellites. We envision users will be able to acquire special software to collect mission specific data during the next decade. However, no decision has been made as to how this software will be distributed or who will be responsible for its development.

Due to the early stage of the design of the GOES NOPQ series of satellites, NOAA can assure that this constellation of satellites will broadcast LRIT data in the next decade. EUMETSAT presented the LRIT global specification at the CGMS XXVI conference for consideration and approval by all participants. All satellite providers, including the US, accepted and agreed to adhere to the global specifications.

## CONCLUSION

Over the past seven years, NOAA has played a critical role in assisting EUMETSAT with the development of the LRIT Global Specification. Throughout the years of debates over the design options for the LRIT, NOAA's primary emphasis has always been on structuring a new communications system that will be beneficial and cost efficient to the user community. NOAA

has a vested interest in LRIT, which will be NOAA data transmitted to thousands of direct broadcast users from the GOES satellites. NOAA believes the LRIT specification will yield a ground receiver that is useful, widely available, and affordable to the direct broadcast users in the next decade.