FRENCH DIRECT TV BROADCAST SATELLITE (TDF-1 AND -2)

(Reimbursable)

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LV/Range: Ariane/CSG

Launch Date: TDF-1: Launched October 27, 1988; TDF-2: Launched July 24, 1990
Projected SC Life/DSN Support: 8 years/30 days

Project Responsibility: Centre National d'Etudes Spatiales (CNES)

Source: SIRD (Rev. 1) October 1989
Sponsor: CNES

A. MISSION DESCRIPTION

The French Direct TV Broadcast Satellite (TDF-1 and -2) missions are to provide three channels of TV and sound broadcasting to France within the 12 to 18 GHz bands. The satellites will be placed in a geostationary orbit at 19 degrees west longitude.

B. FLIGHT PROFILE

TDF-1 and -2 will be launched from the Centre Spatial Guyanis in French Guiana on an Ariane launch vehicle. The missions follow the typical injection sequence; i.e., parking orbit, transfer orbit, and drift orbit. Attitude maneuvers will be performed to orient the spacecrafts prior to Apogee Kick Motor (AKM) firing. After AKM firing, drift phase orbital and attitude maneuvers will be performed to place the spacecrafts in their final geostationary position.

C. COVERAGE

The DSN will support the transfer and drift orbit mission phases.

1. Coverage Goals

The coverage will consist of the 26-m antennas at Goldstone and Canberra as prime support for the transfer and drift orbits. Maximum support will consist of two 8-hour tracks per station for a 7-day period, plus 14 days contingency support.

2. Network Support

The support provided by the DSN is indicated in the following table:

System	Goldstone	Canberra	Madrid
	12 14 15 16	42 43 45 46	61 63 66
S-band TLM	P	P	
S-band CMD	P	P	
S-band TRK	P	P	

NOTE: P = Prime

3. Compatibility Testing

CTA 21 will support spacecraft compatibility testing with the TDF-1 Telemetry, Tracking, and Command (TT&C) "suitcase" model at approximately launch minus 6 months. These tests will verify and test the spacecraft RF compatibility with the DSN.

D. FREQUENCY ASSIGNMENTS

Frequencies are allocated according to the following table:

System	Uplink (MHz)	Downlink (MHz)	Polarization
S-band TLM	--	2204.73	RCP
S-band CMD	2030.189	--	RCP
S-band TRK	2030.189	2204.73	RCP

E. SUPPORT PARAMETERS

The support parameters for the Telemetry, Command, and Support Systems are listed below:

(1) Telemetry

Data Streams	1
Format	PCM(SP-L)/PSK/PM
Subcarrier Frequency	32768 Hz
Bit Rate	512 b/s
Record	Required

(2) Command

Format	PCM/PSK/PM
Bit Rate	500 b/s
Subcarrier Frequency	8000 Hz

(3) Support

Uplink Power	1 to 10 kW
Antenna Rate	Moderate
Antenna Angle Data	Required
Antenna Autotrack	Required
Doppler Rates	Modest
Range Format	Tone (Prime), (100 kHz major tone) DSN standard (Backup)
Recording	
. Analog	Required
. Digital	Required for 34-m backup

F. TRACKING SUPPORT RESPONSIBILITY

The allocation of responsibilities for tracking support is listed in the following table:

Mission Phase	Support Responsibility
Ariane Launch	CSG
Transfer/Drift Orbits	DSN
Geostationary Orbit	CNES

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