



Satellite Access Procedures

Rev.	Date	Revision History
A	6/02	Compressed the CAMP & T11, T12 Access documents into this one smaller document.
B	11/27/02	Added references to CXR ID that customer should use when calling to access
C	01/27/03	Removed frequency charts on page 5 for T11 & T12 and added reference to Eng. Manual and web site for transponder frequency plan.
D	02/10/03	Changed name from Transponder Access Procedures to Satellite Access Procedures.
E	02/20/03	Updated page 2 contact #'s and Sections 2 & 3
F	03/20/03	Removed J. Byrnes & T. Corus; and added reference for T13
G	6/17/03	Updated Skynet escalation chart
H	1/22/04	Removed T4
I	2/18/04	Draft – Added Skynet Console procedures on Page 10
J	5/20/04	Added T18 information
K	8/4/2004	Removed Domestic Satellites Access Information (T4, 5, 6, 7, 13)
L	9/2/04	Added XTAR to page 2 trouble reporting
M	1/14/05	Update contact information for T10 & T18
N	2/4/2005	Added contact information for So. Amer. customers on T14
O	11/01/06	Updated Table 3 – Skynet Transponders added 12B & 17B
P	11/06/06	Corrected fax # on Pg 2 Table 1



Satellite Access Procedures

1. Administration Contact, Trouble Reporting and Escalation

IMPORTANT CONTACT NUMBERS AT LORAL SKYNET		
Department	Function	Phone/Fax Number
Loral Skynet® Sales Department - Bedminster	Obtain contract for capacity services	Phone: 908-470-2322
Loral Skynet Service Center - Hawley	Schedule occasional- use services	Phone: 570-226- 6622 Fax: 570-226- 1273

Table 1

Trouble Report Procedures and Access Contact Phone Numbers

Problems impacting other satellite users or problems caused by other satellite users will be reported to the Hawley Transponder Management group. Hawley technical assistance can be requested if help is needed on intra transponder problems. Customer requests will be made to the Hawley Satellite Assurance Center at the following telephone numbers. Option prompts will direct calls to specific service centers. The option prompts may be executed at any time during the announcement directives.

When reporting a trouble be sure to provided the CXR ID of the carrier that is being affected.

Customers on any of the Loral Skynet Satellites, leased transponders, or the XTAR satellite may call:

Intl. SAC Console Operators: **(570) 226-6622**
 Fax: **(570) 226-1273**
 e-mail: sac@loralskynet.com

For services on Telstar 10 (Apstar 2R) and Telstar 18 (Apstar 5) customers may also call:

Loral Skynet / Singapore Network Operation Center

The normal business hour of Singapore Service Support team is from Monday to Friday 0:30 GMT to 09:30 GMT. Singapore is GMT + 8 hours. T10 / T18 customers may call the Skynet Singapore customer support center at +65 62 839 979. The operator will route the call to the proper technical support personnel. Email: sngcsc@loralskynet.com.

South American customers and customer with service on Telstar 14 (Estrela Do Sul)

may call the Loral Skynet Rio de Janeiro office as shown below in table 2



Satellite Access Procedures

Table 2

TELEFONES DE CONTATO NA LORAL SKYNET E LORAL SKYNET DO BRASIL		
Departamento	Função	Telefone/Fax
Vendas - Loral Skynet do Brasil – Rio de Janeiro	Obter contrato para oferta de capacidade	Telefone: (021) 3211-9703; (011) 4153-5514
Serviço - Loral Skynet do Brasil	Agendamento de uso ocasional de capacidade	Telefone: (021) 3211-9703
Serviço - Loral Skynet - Hawley		Telefone : 1-(570) 226-6622 Fax: 1-(570) 226-1273
The satellite operation center is staffed: Monday to Friday 7am to 10pm Saturday, Sunday and Holidays 1:40pm to 10pm Times shown are local Rio de Janeiro Phone numbers : + 55-21-2253-5195 and 800-282-5195.		

Immediately upon receipt of a reported trouble from a customer, the console technician will initiate a trouble report. Appropriate escalation procedures will be implemented as necessary. Status reports will be furnished to the customer at appropriate intervals.

SPECIAL NOTE FOR T18:

Certain transponders are assigned to APT exclusively and other to Skynet exclusively.

Skynet transponders are show in Table32 below. Skynet is not required to manage the APT transponders. APT will assist Skynet with the transponders listed in Table 2 similarly to what they provide to Skynet on T10. Any customer accessing or trouble reporting on T18 APT transponders should call APT at the above listed numbers.

DESCRIPTION OF LORAL SKYNET TRANSPONDERS

	Skynet Transponders	4 th Anniversary	5 th Anniversary
Standard C-Band	3B, 4B, 6B, , 8A, 10A, 11A, 12B 13B, 14B	12B, 17B	8B, 12B
Extended C-Band	1B, 15A, 15B 16A, 16B, 17B		17A
Ku-Band (Beam #2)	1A, 2A, 3A, 4A	5A, 6A	7A
Total	17	4	4

Table 3



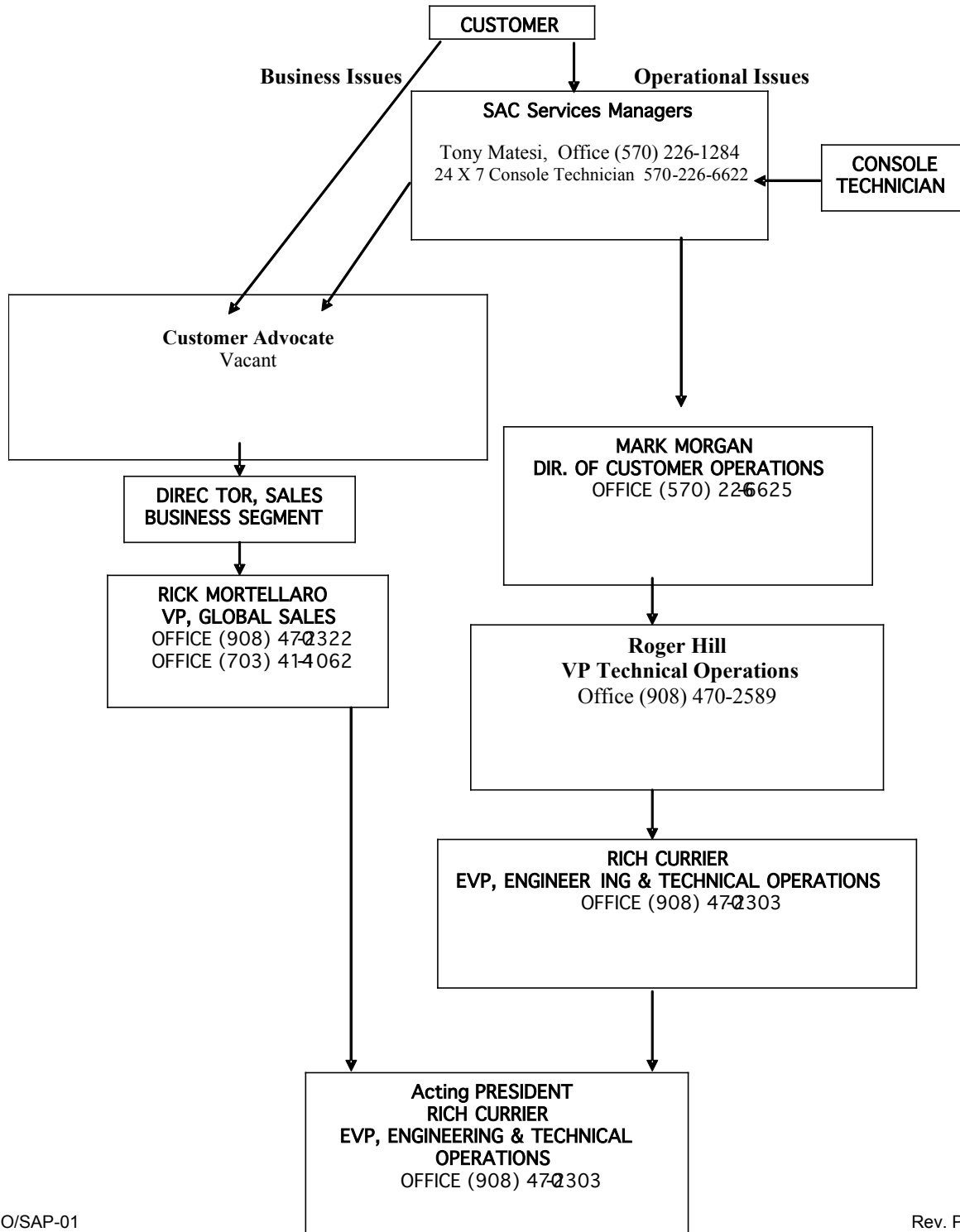
Satellite Access Procedures

Escalation Procedures

If the Customer is not satisfied with the status as reported, they can escalate per the following flowchart.

Service Assurance Managers

Loral Skynet® Network Operations Escalation Flowchart





Satellite Access Procedures

2. Earth Station Obligations

- All earth stations transmitting to LORAL SKYNET satellites must have a **CXR ID** for each channel transmitting.
- In the event of an anomalous condition, the uplink point of contact shall have the absolute authority and technical capability, either by directly or, in the case of a remotely controlled uplink, by alternate means, to modify or cease transmission immediately upon, and in accordance with, direction from the Loral Skynet Satellite Access Center. Should the Loral Skynet Satellite Access Center request modification or cessation of transmission to a Loral Skynet satellite, the uplink point of contact must have the authority to do so without recourse to a higher authority. These criteria may be met by having qualified personnel on site at the earth station during all transmission periods or via remote control from a location manned during all transmission periods. The SKYNET Transponder Service offering contains significant financial penalties for customers who do not promptly cease transmission when notified of a pre-emption by the Hawley Center or when notification is attempted and there is no answer at the telephone number provided by the customer.
- The earth station is responsible for resolving any interference incidents caused by signal transmission to adjacent satellites, which have been identified by the customer or the LORAL SKYNET Transponder Management group.
- The uplinker's are responsible for securing and adhering to the customer's schedule and contacting the customer at the specified time prior to transmission in order to coordinate the provision of service.

Earth Station Technical Requirements

Information about the Loral Skynet Satellites is available on the Loral Skynet web site at:

- <http://www.loralskynet.com/>
- in the Satellite Engineering Manual for the specific satellite.

To assure that signals transmitted via *SKYNET*[®] Transponder Service will not interfere with other signals transmitted over LORAL SKYNET satellites, the transmit earth station and the Service Assurance Center will complete a Performance Evaluation prior to starting service. The following transmission parameters apply:

Transmitted Carriers

Transmit Power

Skynet shall authorize a particular transmit power for each transmitting earth station with a given transponder attenuation setting. For transponders operating in the saturated mode, this authorized transmit power shall normally be the power necessary to saturate the transponder and will not be exceeded by more than 2 dB. For a transponder operating in a mode where the power is backed-off below saturation, this authorized transmit power



Satellite Access Procedures

will not be exceeded. The use of U/L Power Control (UPC) must not cause the authorized power to be exceeded.

Frequency Resolution

It is *recommended* that earth stations accessing the Loral Skynet satellites should have transmit and receive equipment that allows the carrier frequency to be set with a precision of at least 2.5 kHz.

Transmit Polarization Isolation (Earth Station) Guidelines

Since polarization orientation with respect to the local horizon can vary over the coverage area, it is necessary to provide a means to adequately adjust this polarization. It is therefore *mandatory* that the earth station be capable of adjusting its polarization angle over a range of $\pm 60^\circ$.

Isolation between orthogonal cross-polarized signals is optimally at least 35 dB at Ku band frequencies and 30 dB at C band frequencies throughout the frequency bands within the conical angle of 0.25 Theta, where Theta is the half-power beamwidth of the main beam. Some transmit antenna's have specifications of only 30 dB transmit cross-polarization isolation. This is acceptable, however the antennas must still meet the half-power beamwidth requirement using the 30 dB cross-pol specification. These cross polarization requirements may be relaxed up to a maximum of 5 dB on a case-by-case basis.

The polarization adjustment of the earth station antenna relative to the satellite shall be maintained to an accuracy of 1.0 degree at minimum Faraday rotation.

Receive Cross-Polarization Isolation

The quality of the downlink signal depends, among the other factors, on the capability of the earth station to discriminate the received desired signals from the undesired signals on the orthogonal polarization. To limit the excess downlink interference, it is highly desirable that the earth stations provide good receive cross-polarization isolation. It is *recommended* that the earth station assure a receive cross-polarization isolation on axis of its antenna of 30 dB.

Limitations for Stations operating in the 13.75 – 14.0 GHz Band

Earth stations operating in the frequency band from 13.75 – 14.0 GHz have additional restrictions. It is mandatory that earth stations operating in this band must exhibit diameters greater or equal to 4.5m. Also, the EIRP per carrier for stations operating in this band is limited to the range between 68.0 – 85.0 dBW.

EIRP increases more than 2 dB above calculated values will not be allowed. Skynet may, over the life of a satellite, adjust the gain setting of any transponder to maximize satellite throughput efficiency and performance. It is recognized that Saturation Flux Density(SFD) settings may be adjusted from the nominal values of the original setting, and, as a result, earth stations accessing the transponder may be required to adjust their carrier levels up or down accordingly to accommodate such a change.

It is therefore recommended that all transmitting earth stations be capable of providing transmit level control of up to +/- 6 dB from the nominal EIRP value.



Satellite Access Procedures

Earth Station Transmitter Termination

Unauthorized power levels transmitted from one earth station degrades the integrity of the space segment for all users. Removing only the radio frequency drive to the earth station output amplifier is *not* sufficient to terminate the transmission.

It is *mandatory* that the output amplifier be switched into a waveguide load, or the output amplifier must be turned off to terminate the transmission.

Antenna Pointing Stability

To protect adjacent satellites from excess interference, and to meet EIRP stability requirements in the direction of the Loral Skynet satellites, the pointing stability of the uplink antenna must be specified.

It is *mandatory* that uplink antenna pointing stability be such that environmental conditions, both internal and external to the uplink earth station, will not cause sufficient antenna movement to produce more than a ± 1 dB change in operational flux density at the satellite. Under no circumstances may the earth station violate cross-polarization isolation requirements as stated in the previous sections.

3. Accessing Procedures

Prior to accessing a satellite, a transmission plan must be prepared which outlines the specific space segment resources required to satisfy the contracted service. This plan includes:

- **Carrier ID #**
- Frequency and power levels
- transponder loading
- co-frequency traffic on the cross-polarized transponders on Loral Skynet satellites.
- co-polarized traffic on transponders on adjacent satellites.
- the specific nature of the contracted service (site locations, connectivity requirements, performance characteristics of the ground segment which will be used to provide the service, etc.).

Initial Earth Station Performance Verification

Prior to commencement of any uplink transmissions from any site for the first time or after performing certain modifications to an existing station such as re-pointing, depolarizing, antenna and / or feed replacement, etc., it is mandatory that the Loral Skynet Satellite Access Center be contacted to assist in performing an initial earth station performance verification test. To schedule testing, the Loral Skynet Satellite Access Center should be contacted at least twenty-four (24) hours in advance. Technicians in the Loral Skynet Satellite Access Center will first verify that the uplink station is authorized to access the Loral Skynet satellite. A valid customer carrier ID number must be provided to the technician. Next, Loral Skynet technicians will assist the earth station operator in pointing to the Loral Skynet satellite by identifying pilot or beacon frequencies, faxing transponder spectrum plots, and/or providing data on identifying features that may be required. The Loral Skynet Technician will then coordinate with the CUSTOMER to perform the earth station performance verification and access procedures. Initial performance verification is



Satellite Access Procedures

the process whereby the CUSTOMER, under the direction of a Loral Skynet Technician, certifies the suitability of a new or reconfigured uplink earth station prior to the operation of that station using Loral Skynet transponders. The purpose of the process is to prevent any harmful interference into Loral Skynet or adjacent satellite space segments due to an out-of-tolerance anomaly of the earth station and to allow the CUSTOMER to correct problems with the earth station prior to entering into operation. It is recommended that all uplink earth stations be verified at least three (3) business days prior to the expected start of service ensuring:

- that adequate access time is available for testing the earth station.
- that problems can be corrected prior to the expected start date.

Loral Skynet is not responsible for any delays in the CUSTOMER'S service where the CUSTOMER has not obtained performance verification of an earth station. The CUSTOMER should plan sufficient time in advance to allow for the identification of any problems the CUSTOMER may have in passing the performance verification test and subsequently accessing the satellite.

When Ready to Initiate Carriers Contact Loral Skynet Satellite Access Center

Most irregular conditions occur on satellite transmissions during circuit initiation. Consequently, it is *mandatory* that the Loral Skynet Satellite Access Center be contacted any time a CUSTOMER begins transmission of any carrier to the satellite. Even after the CUSTOMER has obtained initial earth station performance verification and is ready to transmit the normal communications signal, it is

still necessary to contact the Loral Skynet Satellite Access Center. It is also requested the CUSTOMER contact the Loral Skynet Satellite Access Center at least twenty four (24) hours in advance to schedule access on the service start date. This request *may* be relaxed on a case-by-case basis.

Interference Reduction Group (IRG) STANDARD ACCESS PROCEDURES

This procedure was developed by the Satellite User's Interference Reduction Group (SUIRG) and should be used for accessing all U.S. Domestic Transponders, both in the C and Ku frequency bands. LORAL SKYNET® presently supports this group and this procedure.



Satellite Access Procedures

UPLINK OPERATORS ACCESS CHECKLIST.

BEFORE CALLING FOR ACCESS CHECK THE FOLLOWING:

1. Have the **CXR ID** / order number and any other pertinent documentation or specifics available.
2. Antenna aiming
3. Exciter tuned to the correct frequency with proper sub carrier injection levels
4. Polarization optimized and set for the correct polarization
5. Transmitter status
6. Configuration of wave guide switches
7. ATIS configured correctly and operational (injection level and sub carrier frequency, etc.) (If Applicable)

WHEN CALLING FOR ACCESS PROVIDE THE FOLLOWING INFORMATION:

1. Uplink operators name
2. Uplink name and location
3. **CXR ID # provided by Skynet**
4. Satellite, transponder, frequency, occupied. bandwidth, deviation / digital rate and uplink polarization
5. Start time of feed
6. Carrier's ID or order number.

PERFORMING THE ACCESS:

During the access process, do not change power, frequency, polarization, or antenna aiming without prior direct instruction from the access control center. If instructed to cease transmission (drop off), the uplink operator must be prepared and in position to comply immediately without discussion.

When instructed by the access center, provide a low power unmodulated carrier at a power of about 5 dB above the transponder noise floor. Verbally confirm that you have done this with the control center. NOTE: If the control center does not see your low power signal as expected, they may instruct you to immediately drop. This is an indication that there is a frequency, polarization or satellite pointing error. If these errors are encountered and corrected then:

1. Wait for further instructions while your crosspol and frequency are checked.
2. When commanded, slowly increase power to operating level and stop.
3. Wait for further instruction while your crosspol is checked again.
4. When commanded, modulate the signal and verify your downlink.
5. Wait for further instruction while your deviation / occupied bandwidth is checked and if applicable, Automatic Transmitter Identification System (ATIS) signal is verified.
6. The control center will ask for, or verify your uplink telephone number. The control center must be able to reach the uplink operator at this telephone number at any time during the uplink.
7. The control center will verify the end time of your uplink.



Satellite Access Procedures

CONSOLE OPERATORS PROCEDURE

PRIOR TO ACCESSING

Record the following:

1. Time of call received
2. Uplink operator name / company
3. Uplink location and reach number (SNG positions are not required to get a reach number)
4. CXR ID # or ORDER NUMBER provided by Loral Skynet if applicable
5. VERIFY WITH UPLINKER
 - a. Satellite, transponder, polarization and frequency
 - b. Occupied bandwidth
 - c. Digital rate if applicable
 - d. Start and stop time of feed if applicable

PERFORMING THE ACCESS:

6. During the access process, tell the uplinker do NOT change, frequency, polarization, or antenna aiming without prior direct instruction from the access control center.
7. If instructed to cease transmission (drop off), the uplinker operator must be prepared and in position to comply immediately without discussion.
8. Instruct the uplinker to provide a low power unmodulated carrier setting the power as low as possible (cross pole exemption sites and SNG positions do not apply).
9. Verify the carrier signal. NOTE: If the control center does not see the low power signal as expected, instruct the uplinker to immediately drop.
 - a. This is an indication that there is an equipment or uplink parameter not set correctly.
 - b. The uplinker must correct the situation before proceeding.
10. If the carrier signal observed, check x-pole
 - a. If ok, instruct uplinker to raise power to nominal level.
 - b. Check x-pole again. The cross pole isolation should be 25 to 30 db for analog carriers and 10 to 15 db for digital carriers.
 - c. If ok, instruct uplinker to modulate signal.
 - d. Verify the downlink (if applicable). Check the bandwidth and ATIS (if applicable)



Satellite Access Procedures

4. Configuration Management

If a reconfiguration or loading change, such as, pad setting, beam setting, power level, FMTV to compressed digital video or changes of frequency, modulation and bit rate, of a transponder is planned, it is ESSENTIAL that you contact a LORAL SKYNET transmission engineer before those changes are made. This request can be faxed (908-470-2455), or verbal contact with a Skynet Customer Focused Engineer. The request for reconfiguration should be submitted at least **60 days** before the reconfiguration is needed. This will allow time for our satellite and transmission engineering group to review the request and determine the impact on transmission quality on adjacent transponders, cross-pol transponders, and adjacent satellites. The Skynet engineering team is dedicated to helping you avoid conflicts with your reconfiguration plans and other transmissions. This team will review each request as well as existing loading plans, coordination agreements, and other pertinent operating constraints to determine if the request can be accommodated. Conflicts and other potential sources of interference will be identified and alternatives will be explored. Skynet realizes that due to unforeseen changes and events, there are times when the **60-day** interval is not possible. Contact must be made at the earliest possible time before the change is required. **Your cooperation will ensure quality transmissions for everyone. If unsure of whom to contact, calls can be accepted by a Customer Service Representative at 570-226-6622** Someone will route your call to the appropriate group.

Customers should call the Hawley Service Assurance Center on 570-226-6622 to have any approved configuration change enacted. A minimum of 15 minutes is required for any standard approved change such as pad. Other non-standard approved changes, such as power or beam changes, will take longer.

5. Service Protection Levels

General

The Satellite Assurance Center (SAC) in Hawley, PA is the sole organization responsible for verifying and implementing restoration plans for LORAL SKYNET satellites. Upon identification or notification of a transponder failure, LORAL SKYNET will request that the transponder be released to LORAL SKYNET for verification of the trouble. The Satellite Assurance Center will not implement any restoration plan until the failure of the transponder has been verified. Generally attempts will be made to activate spare equipment, where available, on-board the satellite in place of a restoration.