EUROCKOT
Launch Service Provider

Dear Customer,

It is my pleasure to provide you with an updated version of our *Rockot* User's Guide containing revised and updated information on the *Rockot* launch vehicle. The revision is dated April 2001.

Rockot is an established and flight-proven launch vehicle programme which benefits from the strong, market-oriented parentage Astrium and Khrunichev State Research and Production Space Center provide both industrially and financially. The *Rockot* programme also enjoys the guarantees of the Russian and German governments.

Technically, it is a low risk programme supported by a minimum availability of 45 SS-19 booster stages to which the unique, re-ignitable *Breeze*-KM upper stages with a newly enlarged payload envelope are added to form the *Rockot* configuration. The SS-19 has flown 144 times without any failure in the past 16 years and the *Rockot* vehicle a total of 4 times without failure. Since issue (2/1) of the User's Guide the programme has achieved significant milestones. The successful performance of the *Rockot* Commercial Demonstration Flight (CDF) in May 2000 allowed both the new EUROCKOT dedicated processing facilities and pad as well as the larger commercial payload fairing configuration vehicle to be verified. They are now operational for commercial launch services. This new issue (3/1) of the User's Guide reflects the knowledge gained during the CDF.

EUROCKOT has meanwhile firmly established itself as an integral part of the launch provider industry with a number of contracts.

Our User's Guide will acquaint you in detail with the capabilities of both the *Rockot* launch vehicle and the programme management functions EUROCKOT offer as the sole interface and contract partner to the Customer. The User's Guide was designed to serve all customers as an initial reference for all phases of our launch service.

We are dedicated to providing a quick response to any question or request you may have. I therefore invite you to address EUROCKOT members or me personally if we can be of service to you.

Sincerely,

G. Stamerjohanns
CEO
EUROCKOT
Launch Services GmbH

Preface
for Issue 3/1 of ROCKOT User's Guide

This revision of the document is intended to update the completely new issue 3/1 of the *Rockot* User's Guide released in April 2001. This issue includes updates primarily to take into account the extensive experience gained during EUROCKOT's Commercial Demonstration Flight (CDF) performed in May 2000. This flight was performed without anomaly; it was thoroughly instrumented was extremely successful in injecting the spacecraft simulators within 600 metres of their intended orbit; all launch environments measured have confirmed the User's Guide data and in many cases the loads have been revised downwards. The launch site and operations chapters have been thoroughly updated to take into account the newly available state-of-the-art payload and launcher processing facilities.

Essentially, the changes introduced in this new revision can be classified as benign, i.e. generally load magnitudes have been confirmed or reduced and the level of detail in the Guide is much deeper. Hence spacecraft designs compatible to the previous issue will be compatible to this issue.

Bremen, April 2001

EHB-0003, Issue 3, Rev. 1

EUROCKOT
Launch Service Provider

Answer Sheet

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Rockot User's Guide

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Abbreviations

AC	Alternating Current
AOCS	Attitude and Orbit Control System
CCTV	Closed-circuit Television
CDF	Commercial Demonstration Flight
CDR	Critical Design Review
CEO	Chief Executive Officer
CIS	Commonwealth of Independent States
CLA	Coupled Loads Analysis
CoG	Centre of Gravity
COP	Combined Operations Plan
DC	Direct Current
DPA	Destructive Physical Analysis
DT	Direct Transmission Mode (Telemetry)
DTSA	Defense Technology Security Agency
EGSE	Electrical Ground Support Equipment
EMC	Electromagnetic Compatibility
FMAD	Final Mission Analysis Documentation
FMAR	Final Mission Analysis Review
FS	Factor of Safety
GMF	Ground Measurement Facility
GMI	Ground Measurement Infrastructure
GN2	Gaseous Nitrogen
GPS	Global Positioning System (US),
GLONASS	Global Navigation Space System (CIS)
GSE	Ground Support Equipment
ICBM	Intercontinental Ballistic Missile
ICD	Interface Control Document
IRD	Interface Requirements Document
KSRC	Khrunichev State Research and Production Space Center
LCR	Launch Control Room
LER	Launch Evaluation Report

LOS	Launch Operation Schedule
LRD	Launch Requirements Document
LRR	Launch Readiness Review
LSM	Launch Service Manager
LV	Launch Vehicle
LVM	Launch Vehicle Manager
MA	Mission Assurance
MAR	Mission Analysis
MCC	Mission Control Centre
MGSE	Mechanical Ground Support Equipment
MIK	Spacecraft Integration Facility for ROCKOT in Plesetsk
MLS	Mechanical Lock System
MM	Mission Manager
MoI	Moment of Inertia
N2O4	Nitrogen Tetroxide (Oxidizer)
O(A)SPL	Overall Sound Pressure Level
PDR	Preliminary Design Review
PLF	Payload Fairing
PMAD	Preliminary Mission Analysis Documentation
PMAR	Preliminary Mission Analysis Review
PSD	Power Spectral Density
QA	Quality Assurance
REC	Data Record Mode (Telemetry)
REP	Data Replay Mode (Telemetry)
RF	Radio Frequency
RMS	Root Mean Square
RPM	Revolutions per Minute
S/C	Spacecraft
SDR	Systems Design Review
SMD	Spacecraft Mission Director
SOP	Spacecraft Operations Plan
SOTP	Spacecraft Operations Test Procedure
SPPA	Single Pyro Released Point Attachment System
SSO	Solar Synchronous Orbit

TA1	ROCKOT Low Rate Telemetry Device
TA2	ROCKOT High Rate Telemetry Device
TAA	Technical Assistance Agreement
TIM	Technical Interchange Meeting
TLC	Transport and Launch Container
UDMH	Unsymmetrical Dimethyl Hydrazine (Fuel)