

# TABLE OF CONTENTS

INTRODUCTION .....	1
Differences Between This Document and IERS Technical Note 13 .....	1
1. CONVENTIONAL CELESTIAL REFERENCE SYSTEM .....	4
Equator .....	4
Origin of Right Ascension .....	4
Precision and Accuracy .....	5
Availability of the Frame .....	5
2. CONVENTIONAL DYNAMICAL REFERENCE FRAME .....	8
3. CONVENTIONAL TERRESTRIAL REFERENCE SYSTEM .....	10
Definition .....	10
Realization .....	10
Transformation Parameters of World Coordinate Systems and Datums .....	11
Plate Motion Model .....	13
4. NUMERICAL STANDARDS .....	18
5. TRANSFORMATION BETWEEN THE CELESTIAL AND TERRESTRIAL SYSTEMS .....	20
Coordinate Transformation Referred to the Equinox .....	20
The IAU 1980 Theory of Nutation .....	22
The IERS 1996 Theory of Precession/Nutation .....	25
The Multipliers of the Fundamental Arguments of Nutation Theory .....	32
Conversion to Prograde and Retrograde Nutation Amplitudes .....	33
Coordinate Transformation Referred to the Nonrotating Origin .....	33
Geodesic Nutation .....	37
6. GEOPOTENTIAL .....	40
Effect of Solid Earth Tides .....	40
Pole Tide .....	46
Treatment of the Permanent Tide .....	46
Effect of the Ocean Tides .....	47
7. SITE DISPLACEMENT .....	52
Local Site Displacement due to Ocean Loading .....	52
Ocean Loading .....	52
Effects of the Solid Earth Tides .....	56
Displacement due to degree 2 tides .....	60
Displacement due to degree 3 tides .....	61
Contributions to the transverse .....	61
Out of phase contributions .....	62
Correction for frequency .....	63
Permanent deformation .....	65
Rotational Deformation Due to Polar Motion .....	65
Antenna Deformation .....	67
Atmospheric Loading .....	67
Postglacial Rebound .....	69
8. TIDAL VARIATIONS IN THE EARTH'S ROTATION .....	72
9. TROPOSPHERIC MODEL .....	78
Optical Techniques .....	78
Radio Techniques .....	78

10. RADIATION PRESSURE REFLECTANCE MODEL .....	81
Global Positioning System .....	81
11. GENERAL RELATIVISTIC MODELS FOR TIME, COORDINATES AND EQUATIONS OF MOTION .....	83
Equations of Motion for an Artificial Earth Satellite .....	83
Equations of Motion in the Barycentric Frame .....	83
Scale Effect and Choice of Time Coordinate .....	84
12. GENERAL RELATIVISTIC MODELS FOR PROPAGATION .....	87
VLBI Time Delay .....	87
Gravitational Delay .....	89
Geometric Delay .....	90
Observations Close to the Sun .....	91
Summary .....	91
Propagation Correction for Laser Ranging .....	92
GLOSSARY .....	95