



International Committee on
Global Navigation Satellite Systems

UN/Nepal Workshop on GNSS Application

GNSS Spectrum Protection and Interference Detection and Mitigation

Introduction

13-14 December 2016

History

- Pre-ICG Action Team on GNSS (1999-2005)
 - Regional Meetings 2000-2003
 - Fall 2004: 1st effort to develop Workplan for ICG
 - Spectrum protection and Interference detection and mitigation (IDM) drafted into ICG Workplan from the beginning
- Proposal by U.S. for Educational Seminar on Spectrum Protection and IDM at Final Pre-ICG Experts Meeting in 2005
 - Never took place... until 2015!

Purpose of this Workshop

Describe the importance of GNSS spectrum protection at the National level, and what you can do to reap the benefits of GNSS



Session Agenda: Tuesday

Tuesday, 13 December 2016

10:45 – 17:00 Session 6 – Seminar on GNSS Spectrum Protection and Interference Detection and Mitigation

I. Overview

10:45 Course Introduction, *Jeffrey AUERBACH, United States of America*

11:00 Participant Introductions: Country, Meeting Participants, GNSS Use Within Country, *Frank CLARK, United States of America, Dominic HAYES, European Commission, Takahiro MITOME, Japan*

II. Introduction to GNSS

11:30 History, *Frank CLARK, United States of America*

11:50 How GNSS Works and Applications, *Dominic HAYES, European Commission*

12:10 GNSS Signals, Spectra, and Receiver Fundamentals, *David CHOI, United States of America*

12:30 Why GNSS is so Weak vs Terrestrial Signals: Why it is Vulnerable, *Dominic HAYES, European Commission*

12:50 Three Ways Interference Affects GNSS, *David CHOI, United States of America*

13:10 – 14:00 *Lunch Break*

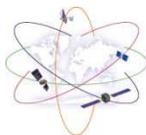


Session Agenda: Tuesday (continued)

Tuesday, 13 December 2016

III. Spectrum Management

- 14:00 What is Spectrum Management and Why Do It, *Dominic HAYES, European Commission*
- 14:15 Introduction to ITU and RNSS Aspects Plus Results of WRC-15, *Takahiro MITOME, Japan*
- 14:45 Introduction to National Spectrum Agencies and National Applications, *Dominic HAYES, European Commission, David CHOI, United States of America, Takahiro MITOME, Japan*
- 15:15 Possible Emissions in GNSS Frequency Bands Other than GNSS Signals, *Takahiro MITOME, Japan*
- 15:35 Adjacent Band Interference Concerns, *Dominic HAYES, European Commission*
- 15:50– 16:05 *Coffee Break*
- 16:05 Q&A Session, *All Workshop Participants*
- 16:35 Conclusion: Summary and Take-Away, *David CHOI, United States of America*
- 17:00 Adjourn



Session Agenda: Wednesday

Wednesday, 14 December 2016

08:30 – 12:05 Session 6 – Seminar on GNSS Spectrum Protection and Interference Detection and Mitigation (continues)

08:30 Introduction, *Jeffrey AUERBACH, United States of America*

08:40 Interactive Discussion: What Was Learned; What Is Needed, *David CHOI, United States of America*

IV. Spectrum Protection

09:10 What is Meant by Spectrum "Protection", *Dominic HAYES, European Commission*

09:30 ITU Role in Interference Enforcement, *Dominic HAYES, European Commission*

09:45 ICG Activities and its Role in Spectrum Protection and Interference Detection and Mitigation, *Jeffrey AUERBACH, United States of America*

10:00 The Ultra-Wide Band Example and a Place to Start, *David CHOI, United States of America*

10:15 – 10:30 *Coffee Break*



Session Agenda: Wednesday (continued)

Wednesday, 14 December 2016

V. Interference Detection and Mitigation

- 10:30 Proliferation of GNSS Jammer Devices, *Frank CLARK, United States of America*
- 10:45 Interference Detection Concepts, *Takahiro MITOME, Japan*
- 11:05 Interference Detection and Mitigation and GNSS Jammers, *Jeffrey AUERBACH, United States of America*
- 11:25 Canadian and Australian Legal Sanctions, *Jeffrey AUERBACH, United States of America*

VI. Summary/Interactive discussions

- 11:40 Summary and Q&A Session, *All Workshop Participants*
- 12:05 End of Session
- 12:05 – 13:05 *Lunch Break*



Contributors

Presenters

- Jeffery AUERBACH
- David CHOI
- Frank CLARK
- Dominic HAYES
- Takahiro MITOME

Contributors

- Rick HAMILTON
- Attila MATAS
- Chris RIZOS
- Tom STANSELL





Participant Introductions