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**

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<th>Time</th>
<th>Session</th>
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<tr>
<td>10:45</td>
<td><strong>Session 6 – Seminar on GNSS Spectrum Protection and Interference</strong></td>
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<tr>
<td>10:45</td>
<td><strong>Detection and Mitigation</strong></td>
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<td>10:45</td>
<td><strong>I. Overview</strong></td>
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<td>10:45</td>
<td>Course Introduction, Jeffrey Auerbach, United States of America</td>
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<td>11:00</td>
<td>Participant Introductions: Country, Meeting Participants, GNSS Use Within</td>
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<td>11:00</td>
<td>Country, Frank Clark, United States of America, Dominic Hayes, European</td>
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<td>11:00</td>
<td>Commission, Takahiro Mitome, Japan</td>
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<td>11:30</td>
<td><strong>II. Introduction to GNSS</strong></td>
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<td>11:30</td>
<td>History, Frank Clark, United States of America</td>
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<td>11:50</td>
<td>How GNSS Works and Applications, Dominic Hayes, European Commission</td>
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<td>12:10</td>
<td>GNSS Signals, Spectra, and Receiver Fundamentals, David Choi, United</td>
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<td>12:10</td>
<td>States of America</td>
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<td>12:30</td>
<td>Why GNSS is so Weak vs Terrestrial Signals: Why it is Vulnerable,</td>
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<td>12:30</td>
<td>Dominic Hayes, European Commission</td>
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<td>12:50</td>
<td>Three Ways Interference Affects GNSS, David Choi, United States of</td>
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<td>12:50</td>
<td>America</td>
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<td>13:10</td>
<td>Lunch Break</td>
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*ICG* International Committee on Global Navigation Satellite Systems
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