WITT Website Demonstration

- PURPOSE: To provide information, interactive media
- ACCESS
- URL:
- NETWORK CLASSIFICATION: Secret

CELL/OTC 084305
CONOPS
Legal

- Legal considerations await the OGC's review, analysis, and approval
- Additional Legal and Policy issues being identified
- Updates and reference material will be posted on the WITT web site
- Any specific legal question, guidance, or advice should be referred to your CDC and/or to the OGC
Preliminary Issues

- Pen Registers
- Title III
- Search Warrants
- Disclosure and Evidentiary Considerations
- Safety Issues
Introduction to the Mobile Phone Systems

Overview: Cellular System Concept

- Cellular System allows the reuse of spectrum within a region by employing centrally connected base stations.
- Each base station wirelessly connects to multiple mobiles within a designated geographic area (cell).
- Base stations connect to a Mobile Switching Center (MSC) and then to the Public Switched Telephone Network (PSTN).
- The system allows:
  - Reuse of spectrum in regions, increasing the capacity of the system over a channel radio system.
  - Mobility of users in the system without loss of connectivity.
Overview: Cellular Components

While multiple access techniques are employed in mobile systems, cellular systems share common system components.

Cellular Systems: Frequency Bands

Communication between the mobiles and the network occur in two frequency bands in the United States.

Cellular Spectrum Allocations in North America

<table>
<thead>
<tr>
<th>Band</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Date</th>
<th>Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>824 MHz</td>
<td>5</td>
<td>5</td>
<td>15</td>
<td>3110 MHz</td>
<td>1910 MHz</td>
</tr>
</tbody>
</table>

PCS Spectrum Allocations in North America

<table>
<thead>
<tr>
<th>Band</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Date</th>
<th>Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1890 MHz</td>
<td>395 MHz</td>
<td>1930 MHz</td>
<td>2010 MHz</td>
<td>2090 MHz</td>
<td>1990 MHz</td>
</tr>
</tbody>
</table>

*Notes: CDMA and TDMA technologies may operate in the 1900 MHz band.*
Cellular and PCS frequency bands are subdivided into Radio Frequency (RF) channels for communication between base stations and mobiles.

- **Reverse Link**
- **Forward Link**
- **Neighbor Channels**

- **Base Station**
- **Mobile**
There are currently five cellular technologies in use in the U.S. market:

- AMPS (10% Market Share)
- TDMA (15-136) (20% Market Share)
- GSM (17% Market Share)
- CDMA (46% Market Share)
- iDEN (74% Market Share)

* Carriers are converting TDMA systems to GSM
**AMPS (Advanced Mobile Phone Service)**

- **Background**
  - Initial U.S. cellular system
  - Reached feasible system capacity limits in mid 90s
- **Limitations**
  - Provides basic voice service
  - No additional services: Digital Messaging, Location based services, etc.

**TDMA (Time-Division Multiple Access)**

- **Background**
  - Technology was the first commercially available digital cellular technology in U.S.
  - Provides increased system capacity and advanced digital services
- **Technology**

- U.S. TDMA systems being replaced with GSM systems
GSM (Global System for Mobile Communications)

- Background
  - Technology first introduced in Europe and migrated to the U.S.
  - Provides increased system capacity, advanced digital services and ability to offer seamless international mobile operation
- Technology
  - Multiplex users by assigning unique operating time slots in shared frequency channels

- GSM is the most widely adopted cellular technology in the world

General Trends

- CDMA and GSM phones will dominate near term U.S. market
  - 33 percent of the market (with conversion of IS-136 systems to GSM)
- 3G Systems will be CDMA-based
- Carriers will continue to develop enhanced features
LoggerHead
Triggerfish Overview
Goal: Learn operation of equipment in simulated case environment

Agenda:
- Equipment Setup
- Scenario 1
- Scenario 2
- Scenario 3

CELL/OTD 004357
Introduction to

StingRay Function
StingRay Lab Exercises
StingRay Field Exercises

Goal:

Agenda:

CELL/OTD.004394