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## SOUTHGATE TERMINAL

### ## Port Operations Security Documentation

### ADDITION TO: Signal Anomaly Response.docx

**INSERT LOCATION:** Add as new section after existing signal anomaly procedures

**SECTION TITLE:** AIS Signal Validation and Correlation Procedures

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### AIS Signal Validation and Correlation Procedures

#### Purpose

This procedure provides real-time validation steps for AIS signal integrity and correlation with other system anomalies. Use when vessels disappear from displays, position data appears incorrect, or timing correlates with other system issues.

#### When to Use

- Individual vessels missing from AIS display
- Multiple vessels simultaneously disappearing
- Position jumps or erratic vessel tracking
- AIS anomalies coinciding with network or CCTV issues
- Reports of vessels being visible but not on AIS

## **AIS Signal Validation Steps**

### **Phase 1: Immediate Verification (First 3 minutes)**

#### **1. Visual Confirmation**

- ☐ Check physical vessel presence through CCTV (if available)
- ☐ Coordinate with dock personnel for visual verification
- ☐ Confirm vessel should be in reported location

#### **2. System Status Check**

- ☐ Verify AIS receiver operational status
- ☐ Check antenna connections and power
- ☐ Review recent AIS system configuration changes

#### **3. Signal Strength Analysis**

- ☐ Check signal strength indicators for affected area
- ☐ Compare with baseline signal levels
- ☐ Note any interference patterns

### **Phase 2: Cross-System Correlation (Next 5 minutes)**

#### **1. Network Correlation**

- ☐ Compare AIS anomaly timing with network issues
- ☐ Check if packet routing delays affect AIS data processing
- ☐ Review network traffic for AIS data streams

#### **2. CCTV Correlation**

- ☐ Compare AIS vessel positions with CCTV visual confirmation
- ☐ Check if CCTV blackouts coincide with AIS losses
- ☐ Verify independent visual tracking capability

#### **3. Operational Correlation**

- ☐ Check if missing vessels are actively loading/unloading
- ☐ Verify vessel scheduling matches AIS displays
- ☐ Confirm harbour pilot communications with “missing” vessels

### **Phase 3: Pattern Analysis (Next 7 minutes)**

#### **1. Single vs. Multiple Vessel Analysis**

- **Single vessel missing:** Likely equipment issue on vessel
- **Multiple vessels missing:** Likely shore-side AIS system issue
- **All vessels missing:** Likely AIS receiver or network failure

## 2. Geographic Pattern Analysis

- ☐ Map affected area boundaries
- ☐ Check if pattern suggests directional antenna issues
- ☐ Verify if specific berths or anchorage areas affected

## 3. Temporal Pattern Analysis

- ☐ Note exact timing of signal loss
- ☐ Check for periodic or intermittent patterns
- ☐ Correlate with other system event timestamps

## Cross-System Correlation Matrix

### Network + AIS Anomalies = HIGH PRIORITY

- **Indicators:** Packet delays AND vessel tracking issues
- **Action:** Immediate technical team coordination
- **Escalation:** Consider external interference possibility

### CCTV + AIS Anomalies = OPERATIONAL RISK

- **Indicators:** Camera blackout AND vessel position loss
- **Action:** Manual operations protocols
- **Escalation:** Safety assessment required

### Network + CCTV + AIS = POTENTIAL CYBER EVENT

- **Indicators:** Multiple systems affected simultaneously
- **Action:** Cyber team escalation
- **Escalation:** Executive notification required

## Real-Time Validation Procedures

### For Missing Individual Vessels

1. **Radio Contact:** Attempt direct VHF contact with vessel
2. **Harbour Pilot:** Confirm vessel position through pilot services
3. **Visual Verification:** Send personnel to physically locate vessel
4. **AIS Transponder:** Request vessel to reset AIS equipment

### For Multiple Missing Vessels

1. **System Restart:** Consider AIS receiver restart if safe to do so
2. **Backup Systems:** Switch to backup AIS receiver if available
3. **Alternative Tracking:** Use radar or CCTV for vessel positions

4. **Harbour Coordination:** Alert harbour master to tracking limitations

#### **For All Vessels Missing**

1. **Emergency Mode:** Declare AIS system failure
2. **Manual Tracking:** Implement full manual vessel tracking
3. **Safety Protocol:** Increase visual watch and radio monitoring
4. **System Investigation:** Full technical investigation required

#### **Communication Protocols**

##### **To Operations Team**

- “AIS anomaly confirmed: [number] vessels affected in [area]. Manual tracking [required/not required]. Operations impact: [description]”

##### **To Technical Team**

- “AIS signal loss correlates with [network/CCTV] issues at [time]. Cross-system investigation recommended. Technical coordination needed.”

##### **To Harbour Master**

- “AIS tracking compromised for [vessels/area]. Implementing [backup procedures]. Request increased radio coordination.”

##### **To Incident Coordinator**

- “AIS Status: [X] vessels tracking normally, [Y] vessels missing. Backup procedures [implemented/not needed]. Safety [maintained/at risk].”

#### **Decision Matrix: Manual vs. Automated Operations**

##### **CONTINUE AUTOMATED OPERATIONS IF:**

- Less than 20% of vessels affected
- Clear equipment malfunction identified
- Backup tracking methods functional
- No correlation with other system issues

##### **SWITCH TO MANUAL TRACKING IF:**

- More than 50% of vessels affected
- Multiple system correlation identified
- Safety concerns about vessel positions
- Extended restoration time expected

## **EMERGENCY PROTOCOLS IF:**

- All vessels missing from AIS
- Active vessel movements with no tracking
- Safety concerns about vessel collisions
- Unknown vessel positions in active channels

## **Escalation Triggers**

### **Technical Escalation (Network Team)**

- AIS anomalies correlate with network timing
- Signal patterns suggest technical interference
- Cross-system timing indicates common cause

### **Cyber Escalation (Security Team)**

- Multiple systems affected simultaneously
- Patterns suggest deliberate interference
- Evidence of external signal manipulation

### **Executive Escalation**

- Safety concerns about continued operations
- Extended AIS outage affecting multiple vessels
- Media attention to vessel tracking issues

### **Success Criteria**

- Accurate determination of AIS system status
- Cross-system correlations identified and documented
- Appropriate backup procedures implemented
- Safety maintained through alternative tracking methods
- Clear communication to all affected teams

### **Related Procedures**

- Use with: Network Diagnostics SOP (for correlation analysis)
- Coordinate with: Manual Override Authorisation (if manual tracking needed)
- Reference: Technical Containment Guide (if cyber threat suspected)
- Escalate to: Crisis Communications SOP (if public safety implications)