Choices For U.S. Nuclear Weapons Policy

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RAND

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The Role of Nuclear Weapons in U.S. Foreign Policy

1. Manage transition to “normal” relations with Russia
2. Manage transition of U.S.-China relationship to avoid “nuclearization”
3. Deter use of nuclear weapons against U.S. and allies
4. Reduce threat of proliferation
5. Reduce threat of accidental or unauthorized use
6. Maintain hedge against serious setbacks in international relations or reliability and safety of the stockpile

Achieving Foreign Policy Goals

- Do not need a large force structure
  - But it needs to be safe, secure, reliable, and sustainable
- Should avoid provocative postures
  - Moscow Treaty addressed only numbers, not how forces are operated
  - Posture is more important than numbers today
- New types of weapons are unlikely to be necessary
  - Utility of nuclear weapons is very limited in future conflicts
- Hedge should be designed to account for long lead times
  - U.S. will have a decade or more to respond to significant changes and new challenges

Beyond The Nuclear Shadow:
A Phased Approach for Improving Nuclear Safety and U.S.–Russian Relations

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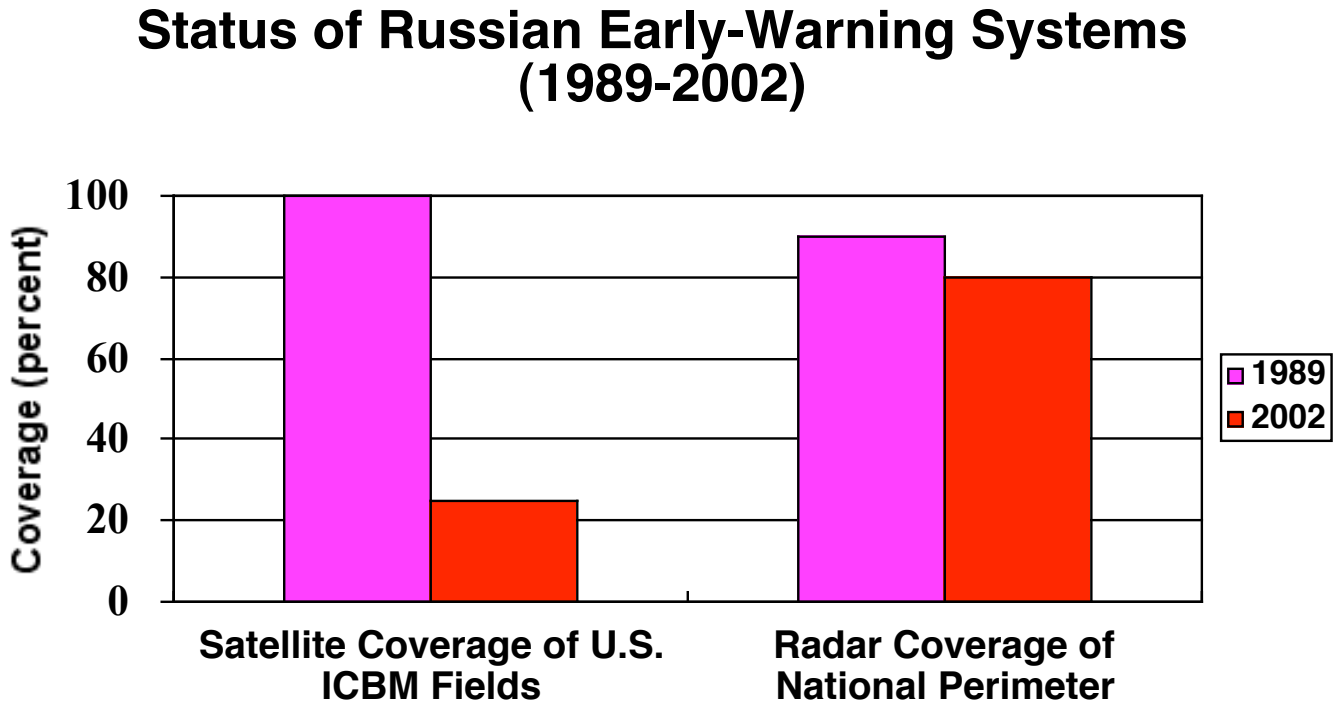
Twin Problems

- The risk of accidental and unauthorized use of nuclear weapons continues today despite the end of the Cold War
- The nuclear dimension of the U.S.-Russian relationship is out of step with political realities, which undercuts foundation for further improvements

Risks of Accidental and Unauthorized Launch Remain

- U.S. and Russia still operate and posture their nuclear forces much as they did during the Cold War
  - Forces smaller, but constantly on alert and driven by the forces of the other
- Russia's economic troubles have created new problems
  - Increased reliance on nuclear weapons
  - Size and readiness of forces plummeting
  - Significant holes in its early-warning system
  - Concerns about personnel reliability and command and control system
- U.S. posture accentuates Russia's concerns
  - Hard target capability threatens Russian forces and command and control nodes
  - Trident submarines close to Russia could attack within about 10 minutes

Russia's Early-Warning System Has Decayed Significantly



Russia has no satellite coverage of oceans or other regions

Striking the Right Balance Between Deterrence and Safety

- Tension has always existed between deterrence and safety
- Cold War posture originated in climate of ideological conflict and direct military confrontation
- Climate has changed dramatically, but balance is still skewed toward deterrence
- Should re-establish the balance between deterrence and safety in a manner that is appropriate for evolving U.S./Russian relationship

Presidents Putin and Bush have taken some important first steps, but have focused on numbers of forces and not how they are postured or operated

RAND Approach

- Studied the underlying factors that could lead to accidental or unauthorized nuclear use
- Explored a wide range of steps that might address those causes
  - Unilateral and cooperative
  - Reduce technical risks, improve relations, make forces match political realities
- Examined in detail 10 potential options
  - Goal was to create concrete options
  - Applied a consistent set of criteria encompassing broad range of issues
  - Explored variations with and without verification

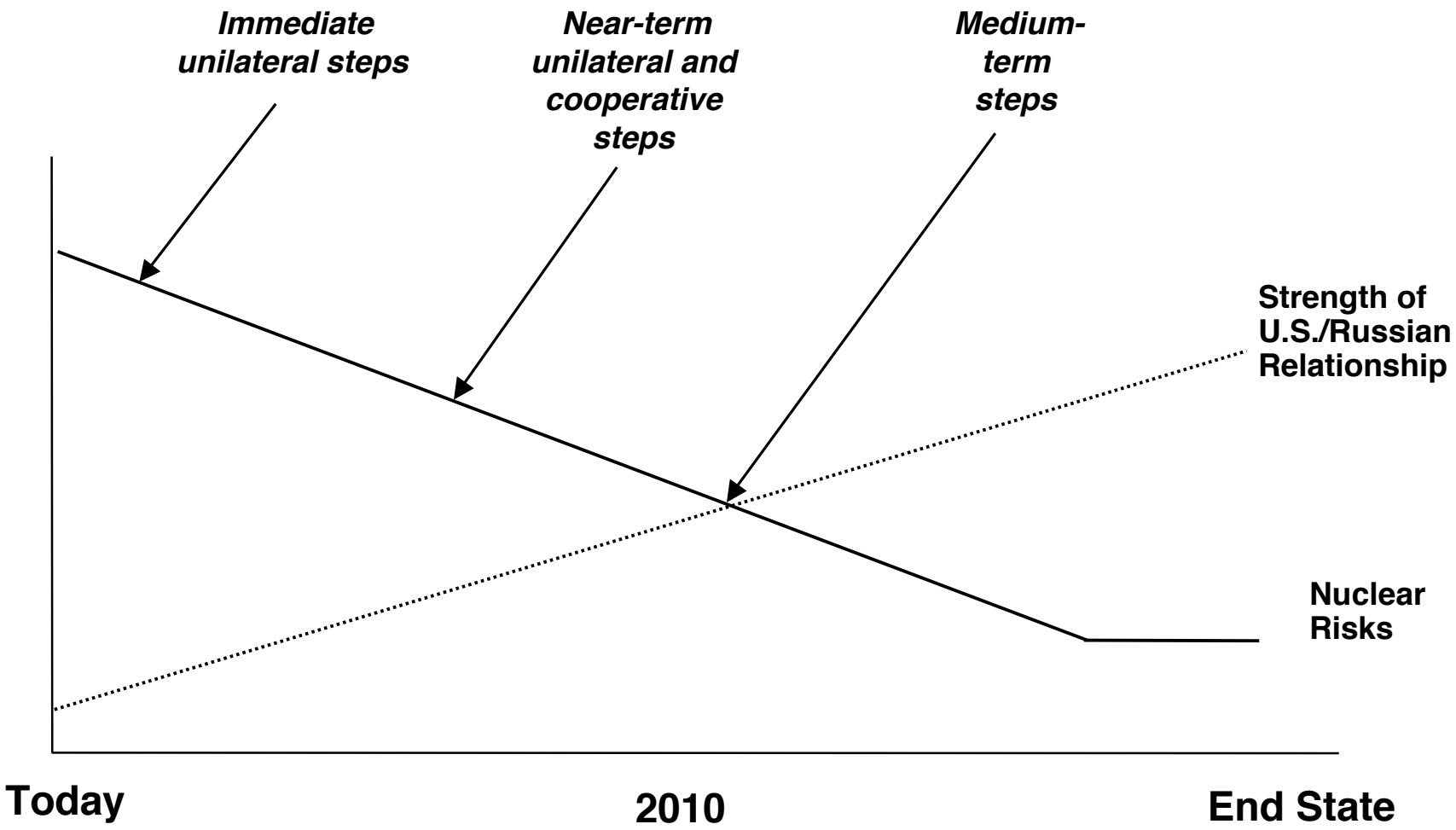
Options RAND Analyzed

1. Provide assistance for improving Russia's early-warning radars or satellites
2. Establish a joint, redundant early-warning system by placing sensors outside U.S.-Russian missile silos
3. Immediately stand down all nuclear forces to be eliminated under the 2002 Moscow Treaty
4. Pull U.S. strategic ballistic missile submarines away from Russia
5. Keep U.S attack submarines away from Russia
6. Remove W-88 warheads from Trident missiles
7. Reduce day-to-day launch readiness of 150 ICBMs in silos
8. Reduce day-to-day launch readiness of all nuclear forces
9. Install Destruct After Launch mechanisms (DALs) on nuclear weapons
10. Deploy limited missile defenses of the United States

Findings

- Several steps have promise
- No one step would eliminate dangers by itself
- Some steps would upend decades of orthodoxy about operations and doctrine
- Nuclear safety and U.S.–Russian relations inextricably linked
  - Solutions must pay attention to both

A Phased Approach to Improving Nuclear Safety



A Phased Approach to Improving Nuclear Safety (2003-2010)

6 months to 1 year

Immediate Unilateral Steps

- Stand down forces to Moscow Treaty levels
- Pull SSBNs away from Russia
- Pull attack subs back
- Reduce launch readiness of 1/3 of silo-based ICBMs

Commit to:

- Put EW sensors on silos
- Fund Russian EW radar
- Continue RAMOS program

2 to 3 years

Near-Term Unilateral Steps

- Eliminate Moscow Treaty forces
- Put EW sensors on silos
- Remove W-88 warheads

Begin Consultations on:

- Further improving Russian EW systems
- Destruct after launch systems
- Reducing launch readiness

5 to 7 years

Medium-Term Steps

- Take an equal number of silo-based ICBMs off alert
- Install sensors on silos to monitor reductions in launch readiness
- Adopt a new deterrence strategy
- Deploy limited missile defense
- Deploy DAL system (mid-course)
- Continue negotiations on further steps to reduce launch readiness

2003 **2006** **2010**

A Phased Approach to Improving Nuclear Safety Beyond 2010

10 to 15 years

End States

Intermediate to Long-Term Steps

- Reduce number of SSBNs at sea
- Provide global EW
- Build joint US-Russian missile defense
- Begin negotiations on verification measures for reducing launch readiness of subs, mobile missiles, and bombers

Possible End States

- Extensive monitoring significantly reduces launch readiness of nuclear forces in all nuclear states

OR

- Some U.S. and Russian nuclear forces remain on low level alert; others taken off alert with modest monitoring; and political relations between U.S. and Russia are similar to those between Britain and France. (allies with no concerns about nuclear forces)

2018 → **End State**

RAND's Approach: 'Nuclear Safety Initiative'

- **Recognize that nuclear safety and U.S./Russian relations are strongly coupled**
  - Steps that improve relations can improve safety; steps that improve safety can improve relations
  - Need to consider implications of nuclear safety options across a broad range of issues
- **Build a pragmatic, phased approach to achieve vision**
  - Begins with immediate steps, then mid- and long-term steps
  - Steps can be unilateral, cooperative, or negotiated
  - Steps can improve safety, relations, or both, set tone, signal intentions, increase decision time
- **Long term vision: Remove nuclear dimension of U.S./Russian relations (de-nuclearize the relationship)**
  - Like U.K. and France
  - Best way to improve nuclear safety

Conclusions

- Risks of accidental and unauthorized nuclear use are real and should not be ignored
- Opportunity to address this major risk right now
- Progress closely linked to U.S.–Russian relations
- Can not be done quickly or easily
- Will require President to take it on directly

Backup Slides

Russia's Survivable Force Likely to Be Very Small

Understanding the Problem:
Possible Scenarios for Accidental or Unauthorized Nuclear Use

Type I: Unauthorized Use

- Intentional launch without authorization by rogue commander or terrorist

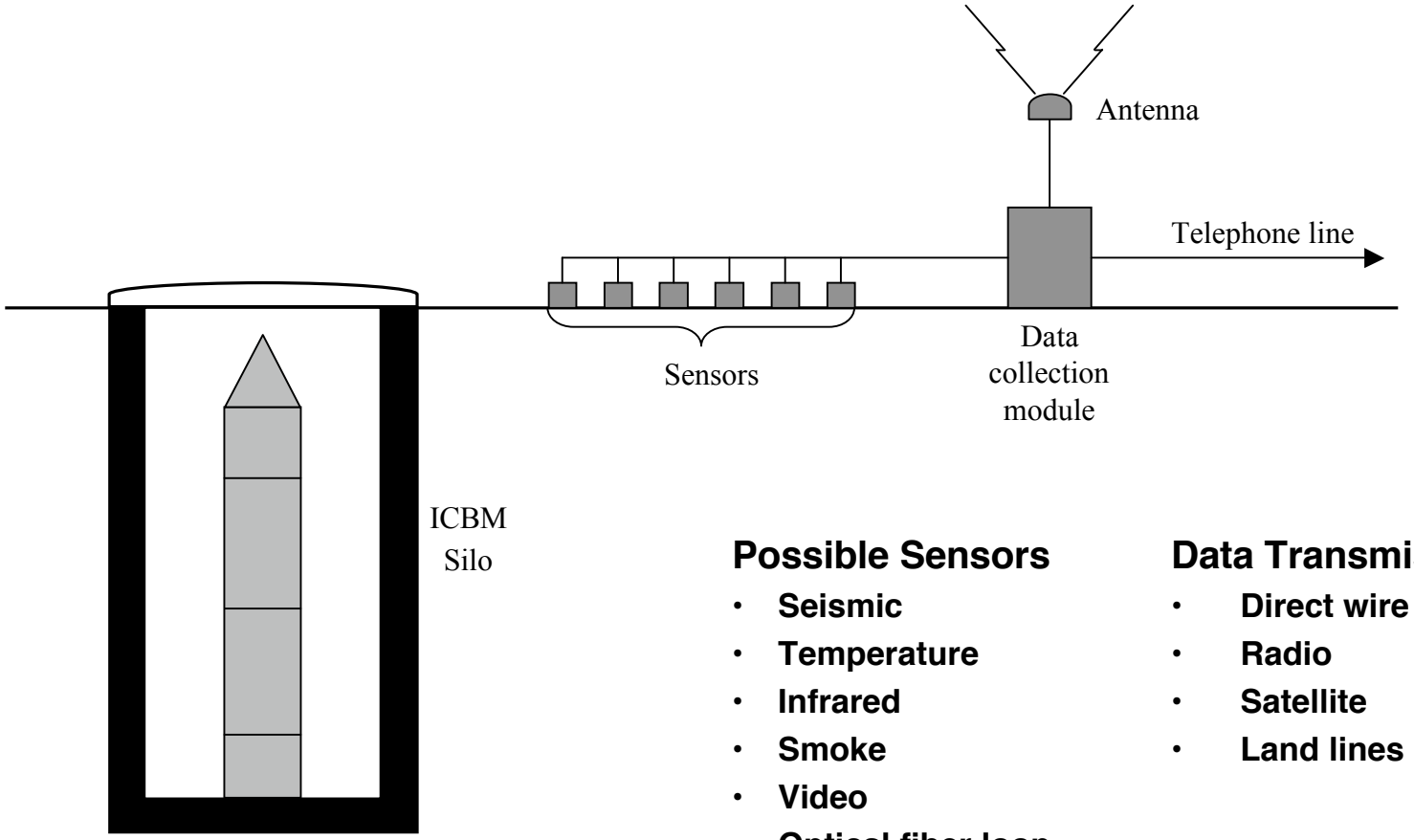
Type II: Missile Launched by Mistake

- Training accident
- System malfunction

Type III: Intentional Launch Based on Incorrect Information

- Malfunctioning early-warning system
- Incorrect interpretation of a non-threatening event
- Misperception of a nuclear attack by a third country or terrorists
- Misperception of an accidental nuclear detonation on its own territory
- Simulated training attack misinterpreted as a real attack

Early-Warning Sensors on Silos



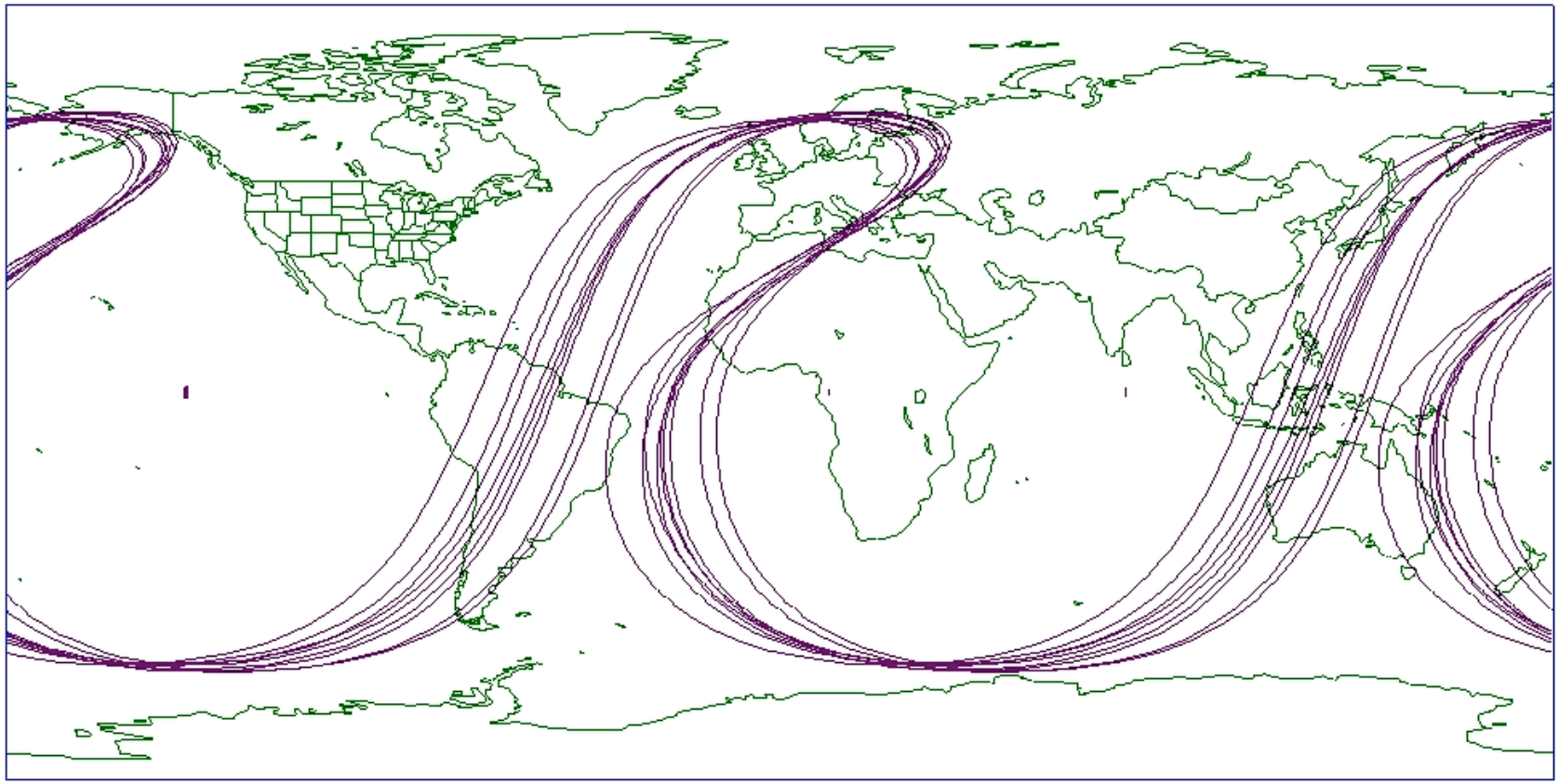
Possible Sensors

- Seismic
- Temperature
- Infrared
- Smoke
- Video
- Optical fiber loop
- Door switches

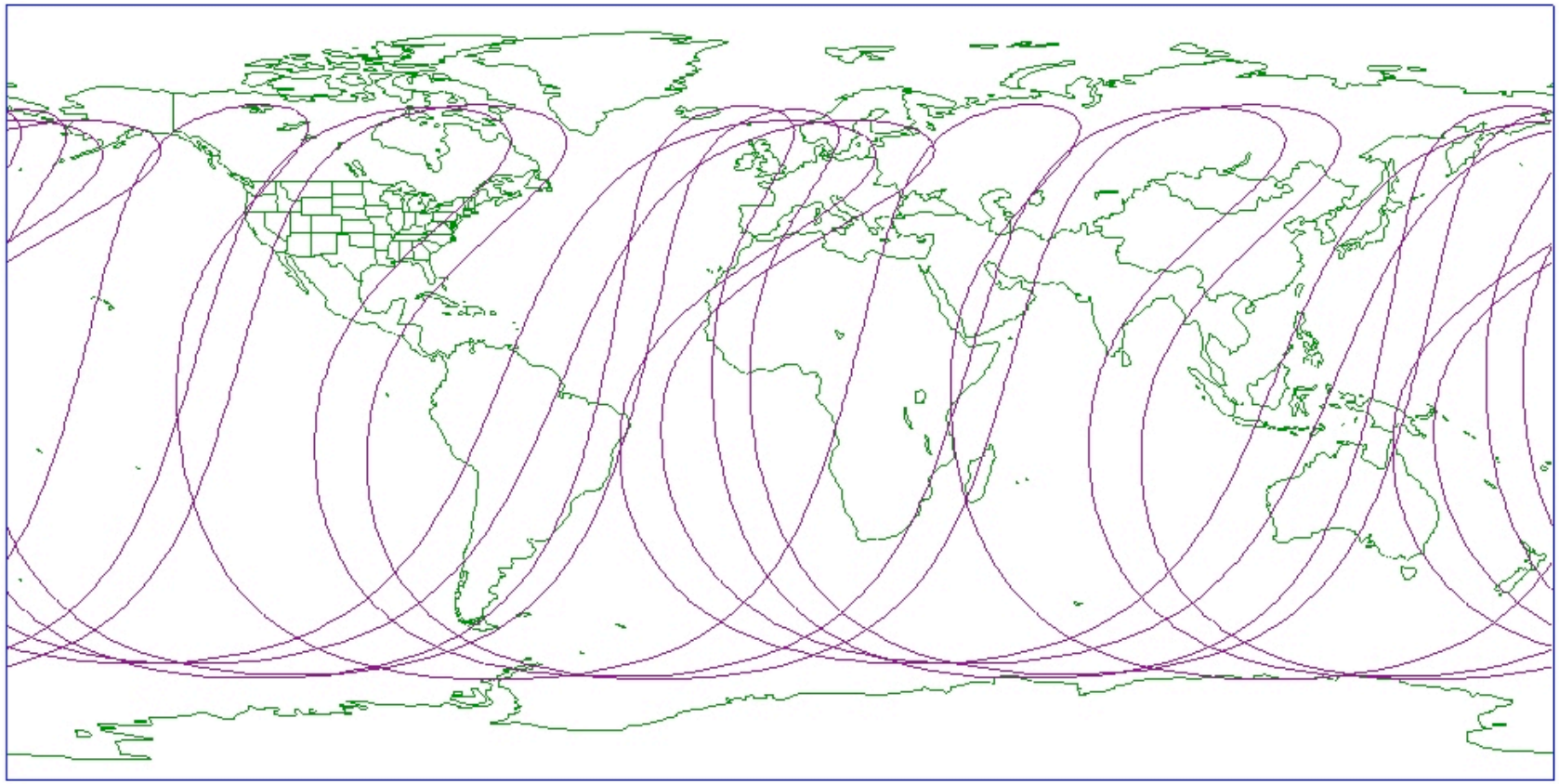
Data Transmission

- Direct wire
- Radio
- Satellite
- Land lines

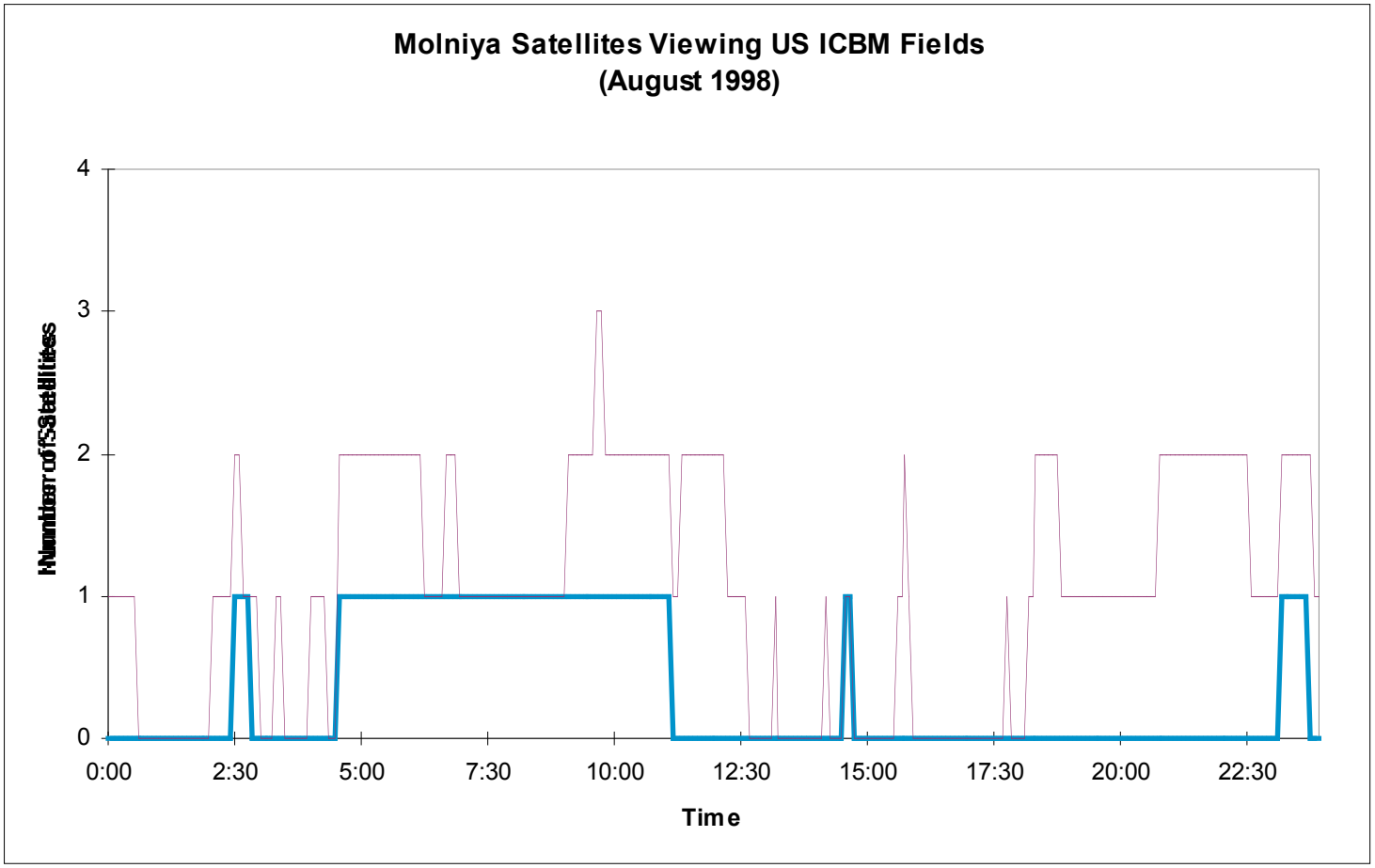
Russian Oko Satellite Ground Tracks on January 25, 1995



Russian Oko Satellite Ground Tracks in 2001



Molniya Satellites Viewing US ICBM Fields (August 1998)



Gaps in Russia's Early-Warning Radar System

Russia Molniya (Oko) and Geosynchronous (Prognos) Early Warning Satellites