REQUEST AND AUTHORIZATION FOR MILITARY PERSONNEL TDY TRAVEL

(AR 310-10)

1. TYPE OF TRAVEL ORDERS

[X] TDY. UCMR PROPER STA. [ ] CONFIRMATORY ORDERS [ ] VERBAL ORDERS DATE CONFIRMED

2. NAME OF REQUESTING OFFICE	3. TELEPHONE EXT.	4. DATE
902d MI Group	274-0900	20 Oct 69

5. FIRST NAME - MIDDLE INITIAL - LAST NAME	GRADE	SERVICE NO./SOCIAL SECURITY ACCT NO.	ARM OR SERVICE	SECURITY CLEARANCE
WILLIAM J. BOWE	SGT E5	328-34-0398	US ARMY	TS

6. ORGANIZATION AND STATION

902d MI Group, Washington, D.C. 20315

9. ITINERARY [X] CIPAP

Washington, D.C. to Colorado Springs Colorado and return

7. TO PROCEED O/A	8. APPROXIMATE NUMBER OF DAYS
26 October 1969	4 (four)

10. PURPOSE OF TEMPORARY DUTY

Official Business

11. TRANSPORTATION AUTHORIZED

[X] COMMON CARRIER [X] AIR [ ] SURFACE [ ] WATER [ ] AS DETERMINED BY TRANSPORTATION OFFICER

[ ] GOVERNMENT OWNED [ ] VEHICLE [ ] AIRCRAFT [ ] VESSEL

[ ] TRAVEL BY PRIVATE AUTOMOBILE AUTHORIZED AS MORE ADVANTAGEOUS TO THE GOVERNMENT

12. QUOTA SOURCE CODE FOR ATTENDANCE AT SERVICE SCHOOLS

13. REMARKS *(Use this space for special requirements, delay, authority for issuance, names of dependents, designation as courier, superior accommodations, excess baggage, etc.)*

Utilization of government quarters or messing facilities is deemed impracticable in that such utilization would adversely affect the performance of the assigned mission. (JTR M4451).

Designated Security Courier.

Authorize $60.00 for use of special conveyance in and around TDY point if necessary (FTR 14501 par 3).

"TRAVEL ADVANCE CHARGEABLE TO: 2102020 12-9930 P930-410 S49190"

14. ADMINISTRATIVE APPROVAL

Thos F Burke

THOMAS F. BURKE, COL, MI
(Name, grade or title)

FOR USE OF APPROVING OFFICE ONLY

16. AGENCY

HQ, 902d MI Group, Washington, D.C. 20315

17. ORDER NUMBER/REFERENCE	18. DATE
LO 455-69	20 Oct 69

15. FISCAL APPROVAL *(Chargeable to)*

2102020 12-1800 P2860-219 S49190 ON 270
CBA:2860.7210

19. APPROVED, TRAVEL TO BE PERFORMED IS NECESSARY IN THE PUBLIC SERVICE, WP.

FOR THE COMMANDER:

William E Carter Jr

NAME, GRADE OR TITLE

WILLIAM E. CARTER, 2LT, FC, B&F OFFICER

NAME, GRADE OR TITLE

[illegible] Cpt, USA

DA FORM 1 DEC 67 662

EDITION OF 1 OCT 61, IS OBSOLETE. ☆U. S. GOVERNMENT PRINTING OFFICE 1968—288 - 029

REQUEST AND AUTHORIZATION FOR TDY TRAVEL OF DOD PERSONNEL

(Reference: Joint Travel Regulations)

Travel Authorized as Indicated in Items 2 through 21.

1. DATE OF REQUEST: 20 Oct 69

REQUEST FOR OFFICIAL TRAVEL

2. NAME *(Last, First, Middle Initial)*: BOWE, WILLIAM J.

3. POSITION TITLE AND GRADE OR RATING: GS-11

4. OFFICIAL STATION: 902d MI Group, Washington, D.C. 20315

5. ORGANIZATIONAL ELEMENT:

6. PHONE NO.: 274-0900

7. TYPE OF ORDERS: LO

8. SECURITY CLEARANCE: TS

9. PURPOSE OF TDY: To conduct DA Activities

10a. APPROX NO. OF DAYS OF TDY *(Including travel time)*: 4 (four)

b. PROCEED O/A *(Date)*: 26 October 1969

11. ITINERARY — [X] VARIATION AUTHORIZED

Washington, D.C. to Colorado Springs Colorado and return

12. MODE OF TRANSPORTATION

COMMERCIAL				GOVERNMENT			PRIVATELY OWNED CONVEYANCE *(Check one)*
RAIL	AIR	BUS	SHIP	AIR	VEHICLE	SHIP	RATE PER MILE:
	XX						[ ] MORE ADVANTAGEOUS TO GOVERNMENT
[ ] AS DETERMINED BY APPROPRIATE TRANSPORTATION OFFICER *(Overseas Travel only)*							[ ] MILEAGE REIMBURSEMENT AND PER DIEM LIMITED TO CONSTRUCTIVE COST OF COMMON CARRIER TRANSPORTATION & RELATED PER DIEM AS DETERMINED IN JTR. TRAVEL TIME LIMITED AS INDICATED IN JTR.

13. [ ] PER DIEM AUTHORIZED IN ACCORDANCE WITH JTR.
[ ] OTHER RATE OF PER DIEM *(Specify)*

14. ESTIMATED COST

PER DIEM	TRAVEL	OTHER	TOTAL	15. ADVANCE AUTHORIZED
$64.00	$200.00	$60.00	$324.00	$324.00

16. REMARKS *(Use this space for special requirements, leave, superior or 1st-class accommodations, excess baggage, registration fees, etc.)*

Authorize $60.00 for use of special conveyance in and around TDY point if necessary (JTR 14501 par 3).
"TRAVEL ADVANCE CHARGEABLE TO: 2102020 12-9930 P930-410 S49190"
Utilization of government quarters or messing facilities is deemed impracticable in that such utilization would adversely affect the performance of the assigned mission. (JTR 14451).

17. REQUESTING OFFICIAL *(Title and signature)*

18. APPROVING OFFICIAL *(Title and signature)*

THOMAS E. DUNN, COL, MI

AUTHORIZATION

19. ACCOUNTING CITATION
2102020 12-1800 P2860-219 S49190 OM 270 CBA:2860.7210

WILLIAM E. CARTER, 2LT, FC, B&F OFFICER

20. ORDER AUTHORIZING OFFICIAL *(Title and signature)* OR AUTHENTICATION

FOR THE COMMANDER

21. DATE ISSUED

22. TRAVEL ORDER NUMBER

DD FORM 1 JUN 67 1610

WJB Trip/10/29/69

Unclassified

THE NORAD STORY

(Mission, Threat, & Organization)

NO MILITARY FORCE IS BROUGHT INTO BEING WITHOUT A REASON FOR ITS EXISTENCE, NOR IS ITS MISSION JUST A MATTER OF CHANCE. YOU ARE ALL AWARE OF THE COMMUNIST IDEOLOGY, AND OF THEIR ANNOUNCED THREAT TO DOMINATE THE WORLD. TO COMBAT THESE FORCES ARRAYED AGAINST US IS THE JOB OF NORAD.

SIMPLY STATED, THE MISSION OF THE NORTH AMERICAN AIR DEFENSE COMMAND IS TO DEFEND THE NORTH AMERICAN CONTINENT AGAINST AIR ATTACK. THE KEY WORDS HERE ARE TO DEFEND, FOR UNLIKE OUR STRATEGIC, COUNTER-OFFENSIVE FORCES, WHOSE MISSION IS TO STRIKE THOSE ENEMY FORCES NOT YET LAUNCHED INTO BATTLE, NORAD'S MISSION IS TO DEFEND AGAINST THOSE ENEMY FORCES THAT ARE ALREADY LAUNCHED AND EN ROUTE TO THEIR TARGETS.

(Interim script. Approved by DoD 17 Jun 68)

NORAD'S TASK, THEREFORE, IS TO DEFEND THE 10-1/2 MILLION SQUARE MILES OF THE NORTH AMERICAN CONTINENT AGAINST HOSTILE WEAPONS IN A "HOT WAR" AND TO EFFECTIVELY "POLICE" THIS SAME AREA AGAINST POTENTIAL ENEMY OVER-FLIGHTS IN THE COLD WAR . . . . WE DO THIS 24 HOURS A DAY, 365 DAYS A YEAR.

TO SHOW YOU WHAT HAPPENS IN NORAD FROM TIME TO TIME, HERE ARE TWO TYPICAL NEWS REPORTS FROM THE PAST THAT MAY HAVE ATTRACTED YOUR ATTENTION. AFTER QUOTING THE NEWS RELEASE, WE WILL TAKE A LOOK AT NORAD'S OPERATIONS BEHIND THE SCENES . . . THE PARTS THAT DID NOT GET INTO THE NEWS. FIRST, A UNITED PRESS ITEM . . . . DATELINE OCTOBER 2, 1963, WASHINGTON, D. C.

"YESTERDAY A FLIGHT OF SOVIET LONG-RANGE BOMBERS APPROACHED TO WITHIN A FEW MILES OF THE NORTH COAST OF ALASKA, THEN FLEW PARALLEL TO THE COAST FOR MORE THAN ONE HOUR BEFORE RETURNING TO THE RUSSIAN MAINLAND."

THAT WAS THE NEWS RELEASE . . . . THESE WERE THE NORAD ACTIONS . . . .!!!!

SHORTLY AFTER SIX O'CLOCK, ON THE MORNING OF OCTOBER 1st, THIS RADAR STATION . . . LOCATED ON BARTER ISLAND . . . IN THE ARCTIC OCEAN . . . REPORTED A FLIGHT OF AIRCRAFT APPROACHING THEIR STATION FROM THE DIRECTION OF SOVIET SIBERIA.

MINUTES LATER . . . USING FLIGHT PLAN CORRELATION . . . THE ALASKAN NORAD SECTOR HAD DETERMINED THAT NO KNOWN AIRCRAFT WERE OPERATING AT THAT REPORTED LOCATION . . . THEREFORE, THESE AIRCRAFT WERE DECLARED UNKNOWNS. WITHIN 5 MORE MINUTES . . . THREE ARMED F-102 DELTA DAGGER FIGHTER INTERCEPTORS ON 5-MINUTE ALERT WERE SCRAMBLED FROM AN ALASKAN AIR BASE TO INTERCEPT THE UNKNOWNS. A SHORT TIME AFTER TAKEOFF, THE F-102'S . . . FOLLOWING THE INSTRUCTIONS OF THE RADAR DIRECTION CENTER . . . HAD INTERCEPTED THE FLIGHT OUT OVER THE ARCTIC OCEAN . . . . THEY IDENTIFIED THEM AS SOVIET "BEAR" TYPE HEAVY BOMBERS . . . TOOK PHOTOGRAPHS . . . AND ASSUMED FLIGHT POSITION FOR CONTINUED SURVEILLANCE.

THESE RUSSIAN AIRCRAFT, SHADOWED BY THE F-102'S . . . APPROACHED TO WITHIN 25 MILES OF THE ALASKAN COAST . . . TURNED WEST . . . AND PARALLELED THE COAST FOR ABOUT TEN MINUTES . . . BEFORE TURNING BACK TOWARD THE NORTH . . . TOWARD RUSSIA.

THE F-102'S RETURNED TO THEIR BASE . . . THE BARTER ISLAND RADAR STATION CONTINUED RADAR SURVEILLANCE OF THE "BEAR" AIRCRAFT UNTIL THEY VANISHED FROM THEIR SCOPES.

NO ACTUAL PENETRATION OF THE AIRSPACE OVER NORTH AMERICA HAD, IN FACT, TAKEN PLACE. JUST IN CASE, HOWEVER, NORAD WAS PREPARED.

OUR SECOND NEWS RELEASE IS FROM THE SOVIET NEWS AGENCY . . . TASS . . . TO THE WORLD PRESS . . . DATELINED . . . MOSCOW . . . 24 AUGUST 1967.

"THE SOVIET UNION TODAY LAUNCHED INTO ORBIT THE 173RD OF A SERIES OF UNMANNED SPACE SATELLITES DESIGNED TO PREPARE THE WAY FOR ADDITIONAL MANNED FLIGHTS.

"THIS LATEST SPACE VEHICLE, DESIGNATED 'COSMOS 173,' CARRIED RADIO TRANSMITTERS AND RADIO TELEMETRIC EQUIPMENT TO RELAY ITS FINDINGS BACK TO EARTH.

THAT WAS THE NEWS RELEASE . . . . THESE WERE THE NORAD ACTIONS . . . . !!!!

ON THAT MORNING OF 24 AUGUST, THIS BALLISTIC MISSILE EARLY WARNING STATION, LOCATED AT THULE, GREENLAND, REPORTED THAT AN UNIDENTIFIED OBJECT HAD BEEN LAUNCHED SHORTLY BEFORE FROM WITHIN THE SOVIET UNION.

IN LESS THAN A MINUTE AFTER THE INITIAL REPORT, THE COMPUTERS OF THE BMEWS SYSTEM, AFTER PERFORMING A RAPID TRAJECTORY ANALYSIS . . . REPORTED THAT THE OBJECT WAS NOT A MISSILE THAT WOULD IMPACT UPON THE NORTH AMERICAN CONTINENT . . . BUT WAS, IN FACT, A SATELLITE DESTINED TO GO INTO ORBIT AROUND THE EARTH.

IMMEDIATELY UPON RECEIPT OF THIS LATTER INFORMATION, THE SPACE DETECTION AND TRACKING SYSTEM . . . OR SPADATS, AS WE REFER TO IT . . . NOTIFIED ITS WORLD-WIDE NETWORK OF RADIO, RADAR, AND OPTICAL SENSORS . . . OF THE SPACE SHOT . . . AND ITS PREDICTED ORBIT.

IN A SHORT TIME . . . SPADATS HAD VERIFIED THE ORBIT OF THE SATELLITE . . . PREDICTED ITS APOGEE OF 347 MILES, . . . ITS PERIGEE OF 176 MILES, . . . AND HAD FORECASTED FUTURE ORBITAL PATTERNS.

AFTER THE SATELLITE ORBIT HAD BEEN VERIFIED . . . THE OPTICAL SENSOR STATION, OPERATED BY THE CANADIAN ARMED FORCES AIR DEFENCE COMMAND AT COLD LAKE, ALBERTA . . . HAD TAKEN A PHOTOGRAPH OF THE SATELLITE.

THE THING TO REMEMBER HERE, -------- THIS TOOK PLACE SOME HOURS BEFORE ANY ANNOUNCEMENTS FROM RUSSIA THAT THEY HAD YET LAUNCHED THAT PARTICULAR SATELLITE. INCIDENTS SIMILAR TO THESE OCCUR FROM TIME TO TIME.

SOME ARE REPORTED IN THE NEWS MEDIA . . . SOME ARE NOT . . . SOME CONCERN SOVIET SUBMARINES OPERATING OFF OUR COASTS . . . SOME CONCERN SOVIET AIR TRANSPORT FLIGHTS TO AND FROM CUBA . . . SOME CONCERN UNKNOWN AIRCRAFT APPROACHING OUR SHORES. ALL OF THESE ARE OF GREAT INTEREST TO US IN NORAD, BECAUSE WE ARE IN THE DEFENSE BUSINESS!!

THE PRIMARY CONCEPT OF ANY DEFENSE STRATEGY IS THAT IT MUST BE BASED UPON AND BE SPECIFICALLY EQUIPPED TO COUNTER THE OFFENSIVE CAPABILITIES OF THE ENEMY.

SO, WHAT IS THE ENEMY CAPABILITY IN TERMS OF ACTUAL WEAPONS? WHAT IS THE POTENTIAL THREAT WHICH NORAD AND ITS COMPONENT COMMANDS MUST BE PREPARED TO DEFEND AGAINST?

THESE ARE THE WEAPON SYSTEMS IN BEING TODAY:

FIRST, . . . THE RUSSIAN BOMBER SYSTEM, WITH A SIZEABLE INVENTORY OF RELATIVELY HIGH-PERFORMANCE AIRCRAFT.

THEY CURRENTLY POSSESS TWO GENERAL TYPES OF BOMBERS . . . SUBSONIC . . . MEDIUM AND LONG RANGE TYPES, . . . AND A SUPERSONIC . . . HIGH DASH SPEED TYPE.

THEIR DEVELOPMENT AND OPERATIONAL EMPLOYMENT OF THE AIR-TO-SURFACE MISSILES, COMMONLY REFERRED TO AS THE "STAND OFF" MISSILE HAS CONVINCED NORAD THAT THE BOMBER IS STILL AN EFFICIENT AND AN EFFECTIVE WEAPON SYSTEM AND WILL SO REMAIN FOR SOME YEARS TO COME.

HERE IS A QUICK LOOK AT THE PRINCIPAL TYPES OF BOMBERS THE SOVIETS HAVE TODAY:

FIRST, THE "BEAR." THIS IS A SUBSONIC . . . 4-ENGINE . . . TURBO PROP AIRCRAFT. IT HAS GREAT RANGE . . . AND CAN REACH ANY TARGET ON THIS CONTINENT ON A TWO-WAY MISSION WITHOUT THE NEED FOR INFLIGHT REFUELING.

NEXT IS THE "BADGER." THIS IS A SUBSONIC . . . TWIN ENGINE . . . JET BOMBER . . . WITH RELATIVELY SHORT RANGE . . . . IT MUST BE REFUELED IN FLIGHT IF IT IS TO BE EFFECTIVELY USED IN AN ATTACK AGAINST THIS CONTINENT. THE SOVIETS DO, HOWEVER, HAVE AN INFLIGHT REFUELING CAPABILITY IN OPERATION TODAY.

NEXT IS THE "BISON." THIS IS A 4-ENGINE JET BOMBER SIMILAR IN SIZE AND CAPABILITY TO SAC'S B-52. IT, TOO, IS SUBSONIC, . . . AND LIKE THE "BADGER" CAN BE REFUELED IN FLIGHT TO COVER MOST ALL NORTH AMERICAN TARGETS.

INTELLIGENCE SOURCES ALSO HAVE CONFIRMED THAT THE SOVIETS HAVE FOR SOME TIME BEEN DOING RESEARCH AND DEVELOPMENT IN THE FIELD OF SUPERSONIC BOMBERS. THIS IS EVIDENCED BY THE APPEARANCE OF A BOMBER IN THEIR INVENTORY HAVING A SUPERSONIC CAPABILITY.

IT IS CALLED THE "BLINDER." IT HAS A SWEPT WING DESIGN WITH TWIN JET ENGINES MOUNTED EXTERNALLY NEAR THE TAIL. IT IS CONSIDERED TO BE A MEDIUM BOMBER.

UNTIL NOT TOO MANY YEARS AGO, THE BOMBER FORCE WAS THE ONLY MEANS THE SOVIETS HAD AVAILABLE TO LAUNCH AN ATTACK ON THIS CONTINENT. NOW, HOWEVER, THE BALLISTIC MISSILE HAS A VERY IMPORTANT PLACE IN THE SOVIET ARSENAL.

THERE ARE TWO KINDS OF BALLISTIC MISSILES WHICH ARE OF SPECIFIC INTEREST TO NORAD . . . THE INTERCONTINENTAL BALLISTIC MISSILE . . . ICBM . . . AND THE SEA-LAUNCHED BALLISTIC MISSILE . . . SLBM.

FIRST, . . . LET'S TAKE A LOOK AT THE ICBM . . . . IT WAS ORIGINALLY DESIGNED AS AN AREA WEAPON WITH LIMITED ACCURACY. CONTINUING DEVELOPMENT, HOWEVER, HAS NOW MADE IT A FAIRLY ACCURATE WEAPON. IT HAS GREAT RANGE . . . AND IS DIFFICULT TO INTERCEPT AND DESTROY.

FORTUNATELY, WE HAVE BEEN ABLE TO FOLLOW THE PROGRESS OF THE SOVIETS IN THIS FIELD FROM THEIR TEST SHOTS INTO THE CENTRAL PACIFIC. THESE TESTS HAVE DEMONSTRATED A CAPABILITY OF SENDING ICBM'S TO DISTANCES IN EXCESS OF 6500 NAUTICAL MILES . . . . THIS IS MORE THAN ENOUGH RANGE TO COVER ALL NORTH AMERICAN TARGETS FROM LAUNCH SITES DEEP WITHIN THEIR OWN LAND AREA.

NEXT IS THE SLBM . . . OR SUB-LAUNCHED BALLISTIC MISSILE . . . . WE KNOW THAT THE SOVIETS POSSESS A SIZEABLE SUBMARINE FLEET; IN FACT, THE LARGEST IN THE WORLD, AND AS THEY CONVERT OR BUILD MORE OF THESE SUBMARINES TO GIVE THEM A BETTER MISSILE LAUNCH CAPABILITY . . . WE MAY EXPECT THIS THREAT TO BECOME SOMEWHAT MORE OMINOUS.

ONE OF THE DIESEL-POWERED MISSILE SUBMARINE TYPES CURRENTLY IN USE BY THE SOVIETS IS SHOWN HERE. . . . NOTICE THE OPEN LAUNCH CHAMBER ON THE AFTER PART OF THE SAIL.

NO DISCUSSION OF THE SOVIET THREAT WOULD BE COMPLETE WITHOUT GIVING SOME ATTENTION TO THEIR SPACE PROGRAM.

THEIR CURRENT SPACE ACTIVITIES APPEAR TO BE IN THE FIELD OF EXPLORATION OF NEAR SPACE . . . AND OF THE EARLY ATTAINMENT OF SOPHISTICATED MANNED SPACE FLIGHT. THEY HAVE CLEARLY DEMONSTRATED THEIR ABILITY TO LAUNCH HEAVY PAYLOAD EARTH SATELLITES THROUGHOUT THE PAST FEW YEARS . . . AND, AS YOU CAN SEE FROM THE PATHS OF THE SOVIETS' MANNED VOSTOKS 3 AND 4 ACROSS THE NORTH AMERICAN CONTINENT, THEY PROBABLY ALREADY HAVE A VERY GOOD RECONNAISSANCE CAPABILITY.

YOU WILL NOTE THAT ON REVOLUTION SIX, THEY PASSED OVER THE HIGHLY INDUSTRIALIZED NORTHEAST, INCLUDING WASHINGTON, D.C.; ON REVOLUTIONS SEVEN AND SIXTY-ONE, VERY CLOSE TO SAC HEADQUARTERS, OMAHA, NEBRASKA; AND ON REVOLUTION 13 . . . OVER NORAD HEADQUARTERS, COLORADO SPRINGS.

FURTHERMORE, A SERIES OF SATELLITE LAUNCHES SUGGESTS THAT THE SOVIETS ARE TESTING A FRACTIONAL ORBITAL BOMBARDMENT SYSTEM OR FOBS. UNDER THIS FOBS CONCEPT, WARHEADS ARE INSERTED INTO A LOW ORBIT AROUND THE EARTH AND THEN DE-ORBITED ONTO THE TARGET DURING THE FIRST REVOLUTION AFTER LAUNCH. BECAUSE OF THE LOW ALTITUDE OF THE FOBS ORBITS, SOME OF THEIR TRAJECTORIES WOULD AVOID DETECTION BY SOME EARLY WARNING RADARS, INCLUDING THE BMEWS.

FURTHER, THE IMPACT POINT CANNOT BE DETERMINED UNTIL IGNITION OF THE ROCKET ENGINE THAT DE-BOOSTS THE PAYLOAD OUT OF ORBIT.

FOR THESE CHARACTERISTICS, HOWEVER, SEVERE PENALTIES ARE PAID IN TWO CRITICAL AREAS . . . ACCURACY AND PAYLOAD. THE ACCURACY AND THE PAYLOAD OF THE FOBS VEHICLE WOULD BE SIGNIFICANTLY LESS THAN THAT OF AN ICBM.

IN LIGHT OF THESE CONSIDERATIONS, IT APPEARS THAT THE FOBS HAS BEEN DESIGNED AS A SURPRISE WEAPON TO SUPPLEMENT RATHER THAN TO REPLACE THE ICBM.

NOW, BEFORE SUMMARIZING THE THREAT, A WORD OR TWO ABOUT RED CHINA.

THERE IS GROWING EVIDENCE THAT THE COMMUNIST CHINESE ARE DEVOTING VERY SUBSTANTIAL RESOURCES TO THE DEVELOPMENT OF BOTH MISSILE DELIVERY SYSTEMS AND NUCLEAR WARHEADS. INDICATIONS ARE THAT THEY WILL HAVE MEDIUM-RANGE BALLISTIC MISSILES WITHIN A YEAR OR SO, WITH AN INITIAL INTERCONTINENTAL BALLISTIC MISSILE CAPABILITY IN THE EARLY 1970's, AND A MODEST FORCE OF THESE ICBM'S IN THE MID-1970's.

AT THE PRESENT TIME, HOWEVER, THE COMMUNIST CHINESE DO NOT REPRESENT A SIGNIFICANT DIRECT THREAT TO NORTH AMERICA.

TO RETURN TO THE RUSSIAN THREAT, WE HAVE VERY BRIEFLY REVIEWED FOR YOU THE EVIDENCE AT HAND. . . . THE SOVIETS HAVE . . . A CAPABILITY FOR AEROSPACE ATTACK AGAINST THIS CONTINENT IN THAT:

1. THEY HAVE A STILL-POTENT BOMBER FORCE WITH A FAMILY OF AIR-TO-SURFACE MISSILES, AS WELL AS BOMBS;

2. THEY HAVE A CAPABILITY TO ATTACK OUR COASTAL AREAS TO A DEPTH OF SEVERAL HUNDRED MILES WITH SUB-LAUNCHED BALLISTIC MISSILES; AND

3. THEY HAVE INCREASING NUMBERS OF INTERCONTINENTAL BALLISTIC MISSILES.

NORAD IS CHARGED WITH WARNING THE NORTH AMERICAN CONTINENT AGAINST ATTACK FROM ANY AND ALL OF THESE WEAPON SYSTEMS AND DEFENDING AGAINST AIR ATTACK.

LET'S NOW TAKE A LOOK AT HOW WE'RE SET UP TO ACCOMPLISH THIS TASK . . . THE ORGANIZATION OF NORAD.

MILITARY PLANNERS OF BOTH THE UNITED STATES AND CANADA REALIZED SEVERAL YEARS AGO THAT THE THREAT TO THE NORTH AMERICAN CONTINENT WAS A SINGLE PROBLEM . . . AND NOT SEPARATE PROBLEMS OF THE TWO NATIONS ACTING INDEPENDENTLY.

THE CONCLUSION THAT THE INTEGRATION OF CANADIAN AND AMERICAN AIR DEFENSE FORCES WAS NECESSARY, LED TO THE ESTABLISHMENT OF NORAD IN SEPTEMBER 1957. AT THAT TIME, THE OPERATIONAL CONTROL OF CONTINENTAL U.S. AND CANADIAN AIR DEFENSE FORCES WAS VESTED IN A SINGLE INTERNATIONAL COMMANDER . . . THE COMMANDER-IN-CHIEF, NORAD.

THE 150,000 PERSONNEL, AT SOME 350 LOCATIONS, WHO MAKE UP THE INTEGRATED FORCES UNDER THE CONTROL OF GENERAL RAYMOND J. REEVES, COMMANDER-IN-CHIEF, NORAD, ARE PROVIDED BY THREE MILITARY COMPONENT COMMANDS. . . . THEY ARE . . . THE CANADIAN ARMED FORCES AIR DEFENCE COMMAND, COMMANDED BY MAJOR GENERAL MICHAEL E. POLLARD; . . .

. . . THE USAF AEROSPACE DEFENSE COMMAND, COMMANDED BY LT GENERAL ARTHUR C. AGAN, JR.; . . . AND THE U.S. ARMY AIR DEFENSE COMMAND, COMMANDED BY LT GENERAL GEORGE V. UNDERWOOD, JR.

IN ADDITION, LT GENERAL ROBERT A. BREITWEISER, COMMANDER-IN-CHIEF OF THE ALASKAN COMMAND, A SEPARATE UNITED STATES UNIFIED COMMAND, IS RESPONSIBLE TO THE COMMANDER-IN-CHIEF, NORAD, FOR THE AIR DEFENSE OF ALASKA.

IN ITS ORGANIZATION . . . NORAD IS RATHER UNIQUE IN SOME RESPECTS. . . . FIRST, . . . THE COMMANDER-IN-CHIEF . . . GENERAL REEVES . . . IS RESPONSIBLE TO BOTH THE CANADIAN MINISTER OF NATIONAL DEFENCE AND THE UNITED STATES SECRETARY OF DEFENSE . . . THROUGH THE CANADIAN DEFENCE STAFF AND THE U.S. JOINT CHIEFS OF STAFF.

SECOND . . . BY TERMS OF AGREEMENT BETWEEN THE UNITED STATES AND CANADA . . . THE COMMANDER-IN-CHIEF AND DEPUTY COMMANDER-IN-CHIEF CANNOT BE FROM THE SAME COUNTRY. SINCE GENERAL REEVES IS A UNITED STATES OFFICER, NORAD'S DEPUTY COMMANDER IS, THEREFORE, A CANADIAN . . . LIEUTENANT GENERAL ~~WILLIAM R. MacBRIEN~~ SHARP . . . WHO, IN THE ABSENCE OF GENERAL REEVES, HAS COMPLETE AUTHORITY OVER ALL NORAD FORCES . . . AMERICAN AS WELL AS CANADIAN.

IN EXERCISING OPERATIONAL CONTROL OVER THESE VARIOUS COMPONENT FORCES, NORAD HAS DIVIDED THE CONTINENT INTO 5 GEOGRAPHICALLY NAMED REGIONS. EACH REGION HAS ITS OWN AIR DEFENSE COMMANDER AND ITS OWN HEADQUARTERS.

THESE REGIONS ARE FURTHER SUBDIVIDED INTO AIR DIVISIONS, THE NUMBER OF DIVISIONS BEING DETERMINED BY THE AMOUNT OF AIR TRAFFIC AND THE NUMBER OF VITAL TARGETS LOCATED WITHIN THAT PARTICULAR REGION.

THIS OPERATIONAL ORGANIZATION IS THEN TIED TOGETHER BY A COMMAND AND CONTROL SYSTEM CONSISTING OF . . . THE COMBAT OPERATIONS CENTER AT NORAD HEADQUARTERS . . . THE COMBAT CENTERS OF NORAD REGIONS . . . AND THE DIRECTION CENTERS OF THE NORAD AIR DIVISIONS.

AT THE NORAD COMBAT OPERATIONS CENTER . . . THE THREAT IS EVALUATED . . . THE STATE OF EMERGENCY DECLARED . . . CIVIL AND MILITARY ACTION IS COORDINATED . . . AND THE OVERALL AIR BATTLE IS MONITORED.

EACH REGION COMMANDER . . . IN TURN . . . IS RESPONSIBLE FOR THE DEFENSE OF THE AREA UNDER HIS CONTROL . . . . HE MONITORS AND COORDINATES THE AIR ACTION . . . HE PLANS THE FULL USE OF ASSIGNED FORCES . . . AND HE SUPERVISES THE METHODS, TACTICS, AND PROCEDURES BY WHICH THE AIR BATTLE IS FOUGHT.

THE DIVISION COMMANDER IS DIRECTLY RESPONSIBLE FOR ACTUALLY FIGHTING THE AIR BATTLE. . . . HE MUST ENGAGE THE ENEMY AND COMMIT THE WEAPONS . . . HE MUST COMBAT THE THREAT DIRECTLY . . . AND HE DOES THIS WITH HIS ASSIGNED FORCES.

HERE, NOW, ARE TWO STATISTICS OF THE NORAD ORGANIZATION THAT WE BELIEVE YOU WILL FIND INTERESTING.

MENTIONED BRIEFLY WERE NORAD'S 150,000 PERSONNEL. THIS ILLUSTRATION SHOWS THE PERCENTAGES OF PERSONNEL FURNISHED BY THE VARIOUS COMPONENT COMMANDS. THESE INCLUDE THE UNITED STATES NATIONAL GUARD PERSONNEL, AND, IN ADDITION, THERE ARE SEVERAL NAVAL AND MARINE CORPS PERSONNEL ATTACHED TO NORAD.

WHEN WE SPEAK OF NORAD AND ITS ACCOMPLISHMENTS, WE REFER NOT ONLY TO THE VITAL CONTRIBUTION OF THESE COMPONENT FORCES, BUT OF ALL OTHER ELEMENTS WHICH CONTRIBUTE TO THE AIR DEFENSE OF NORTH AMERICA.

FROM THE BUDGET FOR THE CURRENT FISCAL YEAR, WE SEE THAT THE UNITED STATES ALLOTTED 1.7 BILLION DOLLARS TO NORAD WHILE CANADA ALLOTTED APPROXIMATELY 135 MILLION. THESE SUMS REPRESENT 2.3% OF THE TOTAL U.S. DEFENSE BUDGET, AND 12.8% OF CANADA'S TOTAL DEFENSE BUDGET.

IN SUMMARY, THEN, THE ORGANIZATION OF NORAD IS PLAIN. . . . IT IS A TWO-NATION COMMAND . . . IT IS JOINTLY MANNED . . . EACH MEMBER HAS THE TASK OF DEFENDING THE NORTH AMERICAN CONTINENT AGAINST AIR ATTACK!

_____, OF THE_____, WILL NOW DESCRIBE NORAD'S CURRENT OPERATIONS. _____.

THE THREAT PORTION OF OUR BRIEFING IDENTIFIED THOSE ENEMY WEAPON SYSTEMS AGAINST WHICH NORAD MUST DEFEND. WE WOULD LIKE NOW TO SHOW HOW WE PROVIDE THIS DEFENSE . . . HOW WE DO OUR JOB . . . . THESE ARE NORAD'S CURRENT OPERATIONS.

FIRST OF ALL, THERE ARE THREE BASIC REQUIREMENTS FOR AIR DEFENSE WHICH MUST ALWAYS BE SATISFIED -- THESE ARE:

TO DETECT . . . TO DETERMINE INTENT . . . AND, IF WARRANTED, TO DESTROY THE OBJECT PENETRATING THE SURVEILLANCE AREA.

A FURTHER OBJECTIVE, INHERENT IN THE ACCOMPLISHMENT OF THESE MORE FUNDAMENTAL REQUIREMENTS, IS THAT OF WARNING.

SO, LET'S TAKE A LOOK AT THE MANNED BOMBER THREAT, AGAINST OUR ORIGINAL REQUIREMENT, DETECTION.

THE FIRST COMPONENT OF THIS DETECTION SYSTEM IS . . . THE DISTANT EARLY WARNING, OR DEW LINE.

THE DEW LINE IS A COMPLEX OF LAND-BASED RADAR INSTALLATIONS THAT STRETCH FROM THE WESTERN TIP OF THE ALEUTIAN CHAIN, THROUGH THAT CHAIN TO ALASKA . . . ACROSS THE NORTHERN RIM OF OUR CONTINENT . . . OVER TO GREENLAND, AND, ICELAND . . . CONNECTING TO THE NATO RADARS IN THE UNITED KINGDOM AND EUROPE . . . SOME 6,000 MILES IN ALL.

THIS IS OUR NORTHERNMOST SURVEILLANCE AND DETECTION SYSTEM . . . OUR LINE OF "FIRST WARNING."

IN ADDITION TO THE DEW LINE, THERE EXISTS SOME MILES TO THE SOUTH A BLANKET OF SURVEILLANCE AND CONTROL RADARS, WHICH COVERS SOUTHERN CANADA AND THE UNITED STATES.

THIS BLANKET, OR CONTIGUOUS COVERAGE RADAR NET CONSISTS OF INTERLOCKING AND OVERLAPPING RADARS WHICH PROVIDE THE TRACKING AND CONTROL FUNCTIONS OF OUR AIR SPACE DEFENSE.

TO GIVE ADDITIONAL WARNING TIME TO THE AREAS ALONG THE EAST AND WEST COASTS AND OFF SOUTHERN FLORIDA, THIS RADAR COVERAGE IS EXTENDED OUT TO SEA BY THE USE OF UNITED STATES AIR FORCE AEROSPACE DEFENSE COMMAND RADAR PICKET AIRCRAFT.

LOOKING AT OUR DETECTION SYSTEMS AND OUR SURVEILLANCE AND CONTROL RADARS TOGETHER, THIS IS THE COMPLETE PICTURE OF NORAD'S RADAR COVERAGE AGAINST THE MANNED BOMBER THREAT.

THE POSITIVE IDENTIFICATION OF DETECTED PENETRATIONS INTO THIS ENTIRE AREA HAS BEEN ONE OF THE MOST DIFFICULT PROBLEMS FACING NORAD.

SOME 209,000 FLIGHTS PASS DAILY OVER THE NORTH AMERICAN CONTINENT . . . AND SOME 800 TO 1,200 OF THESE ORIGINATE IN OVERSEAS AREAS. WE MUST, IN ALL CASES, IDENTIFY THESE INCOMING FLIGHTS WHICH COULD BE ENEMY AIRCRAFT.

TO ASSIST IN THIS, WE HAVE ESTABLISHED AIR DEFENSE IDENTIFICATION ZONES, CALLED ADIZ, WHICH SURROUND THE NORTH AMERICAN CONTINENT. ANY AIRCRAFT ENTERING THESE ZONES IS REQUIRED TO FILE A FLIGHT PLAN, GIVING THE ESTIMATED TIME AND POINT OF PENETRATION.

AS THE AIRCRAFT ACTUALLY PENETRATES THE ADIZ, WE CHECK ITS TIME AND POSITION WITH RADAR, AND IF IT DOES NOT CORRELATE OR COMPARE WITH THE FLIGHT PLAN THAT THE PILOT FILED, THE AIRCRAFT IS DECLARED UNKNOWN, AND FIGHTER INTERCEPTORS ARE SCRAMBLED TO INTERCEPT, AND VISUALLY IDENTIFY THIS UNKNOWN AIRCRAFT.

AS YOU CAN SEE . . . THIS GROUND AND AIR RADAR SYSTEM IS RATHER COMPLEX, . . . AND SO FAR WE HAVE ONLY CONCERNED OURSELVES WITH THE SYSTEMS DESIGNED TO DETECT AND IDENTIFY THE MANNED BOMBER . . . .

IN OTHER WORDS, THE INTERCONTINENTAL BALLISTIC MISSILE AND THE SPACE VEHICLE STILL MUST BE RECKONED WITH TO SATISFY OUR INITIAL REQUIREMENT . . . DETECTION.

IN RECOGNITION OF THE CAPABILITY OF THESE VARIOUS SPACE OBJECTS, . . . BOTH NOW AND IN THE FUTURE, . . . WE HAVE DEVELOPED OTHER DETECTION SYSTEMS AGAINST THEM . . . AND THESE ARE OPERATIONAL TODAY.

THE FIRST OF THESE IS THE BALLISTIC MISSILE EARLY WARNING SYSTEM . . . KNOWN AS "BMEWS." BMEWS CONSISTS OF THREE SEPARATE DETECTION COMPLEXES . . . ONE AT CLEAR, ALASKA, . . . ONE AT THULE, GREENLAND, . . . AND ONE AT FYLINGDALES MOOR, YORKSHIRE, ENGLAND.

EACH SITE . . . IS EQUIPPED WITH LARGE RADARS THAT SCAN SOME 3,000 MILES OUT OVER THE EURASIAN LAND MASS . . . AND THEY ARE ABLE TO DETECT MISSILE LAUNCHES.

SO LET'S TAKE A LOOK AT EXACTLY HOW BMEWS DOES THIS WARNING JOB.

LET US ASSUME THAT A MISSILE HAS LIFTED OFF AN ENEMY LAUNCH PAD AND IS ACCELERATING IN ITS CLIMB INTO SPACE. HERE THE BMEWS SITES ARE BEAMING THEIR ELECTROMAGNETIC ENERGY INTO TWO FANS THROUGH WHICH THE MISSILE WILL PASS. . . . AS IT COMES UP OVER THE HORIZON, IT STRIKES THE LOWER FAN OF THE BMEWS RADAR, AND THE REFLECTED ECHO IS PICKED UP BY RECEIVERS BACK AT THE BMEWS SITE. THEN, AS THE MISSILE CONTINUES TO CLIMB . . . IT PENETRATES THE UPPER FAN.

. . . AGAIN THE REFLECTED ECHOES PICKED UP BY THE RECEIVERS. . . . THESE TWO ECHOES ARE CONVERTED TO NUMERICAL FORM AND FED INTO A COMPUTER WHICH CALCULATES THE BALLISTIC PATH OF THE MISSILE.

WITH ADDITIONAL TRACKER RADARS; THE COMPUTER CAN THEN DETERMINE WHETHER OR NOT THIS MISSILE HAS THE NECESSARY ANGLE, DIRECTION, AND VELOCITY TO IMPACT ON THE NORTH AMERICAN CONTINENT. THE COMPUTER CAN DETERMINE THE LAUNCH AREA FROM WHICH THE MISSILE WAS FIRED, AND PREDICT THE IMPACT AREA AND THE IMPACT TIME HERE ON NORTH AMERICA.

NOW THESE BMEWS RADARS SEE MANY THINGS OUT IN SPACE, INCLUDING METEORITES, PLANETS, SATELLITES, AND SPACE DEBRIS. THE DIFFICULT THING TO DO IS TO SORT OUT THE THREAT MISSILES FROM THE OTHER TRAFFIC, . . . AND IT IS VERY DIFFICULT.

FOR EXAMPLE, HERE ARE THE BMEWS SCOPE DISPLAYS, JUST WHAT THE RADAR OPERATOR SEES LOOKING AT HIS BMEWS WARNING SCOPE:

IN THE UPPER RIGHT HAND CORNER WE HAVE

. . . . . THE MOON . . . . .

. . . . . A METEOR TRAIL . . . . .

. . . . . A SATELLITE . . . . .

AND IN THE LOWER RIGHT HAND CORNER THE THING WE ARE ALL CONCERNED WITH

. . . . . THE ICBM . . . . .

AS YOU CAN SEE, THEY ALL LOOK VERY MUCH ALIKE, AND IT'S BEYOND HUMAN ABILITY TO VISUALLY DISTINGUISH BETWEEN THE MISSILE AND OTHER SPACE OBJECTS.

THE LARGE, HIGH-SPEED COMPUTER, HOWEVER, USING MATHEMATICAL FORMULAS WHICH DESCRIBE THE MOTION OF BODIES IN SPACE, CAN DISCRIMINATE BETWEEN NON-MISSILE OBJECTS AND THE REAL THING.

BUT THE BMEWS SYSTEM ONLY WARNS . . . AND AS OF NOW . . . NORAD HAS NO ACTIVE DEFENSE AGAINST THE INTERCONTINENTAL BALLISTIC MISSILE. IN THE EVENT OF AN ICBM ATTACK AGAINST THIS CONTINENT, WE COULD EXPECT FROM 15 TO 20 MINUTES OF WARNING TIME. ADMITTEDLY, THAT'S NOT VERY MUCH TIME, BUT IT IS ENOUGH TO ALERT OUR STRATEGIC COUNTER-OFFENSIVE FORCES, THE BOMBERS AND MISSILES OF THE STRATEGIC AIR COMMAND, THE NAVY'S POLARIS SUBMARINE FLEET, AS WELL AS TO BRING OUR OWN NORAD DEFENSIVE FORCES TO THE HIGHEST STATE OF READINESS . . . .

AND, OF COURSE, TO ALERT THE HEADS OF THE U.S. AND CANADIAN GOVERNMENTS AND THE CIVILIAN POPULATION OF THE UNITED STATES AND CANADA THROUGH THE CIVIL DEFENSE NATIONAL WARNING CENTER LOCATED IN THE NORAD COMBAT OPERATIONS CENTER.

OUR WARNING SYSTEMS AGAINST SATELLITES ARE EVEN MORE COMPLICATED THAN BALLISTIC MISSILE WARNING SYSTEMS. THE DISTANCES AND VELOCITIES INVOLVED IN SATELLITE WARNING ARE SO GREAT THAT RADAR ALONE CANNOT DO THE JOB. WE USE POWERFUL OPTICAL EQUIPMENT . . . CAMERAS AND TELESCOPES . . . AND RADIO TRACKERS WHICH CAN TRACK A SATELLITE AS FAR AS DISTANT PLANETS. (IT WAS A RADIO TRACKER, FOR EXAMPLE, WHICH TRACKED THE MARINER 4 SATELLITE ON ITS 134 MILLION MILE JOURNEY TO THE PLANET MARS.)

THE NORAD SPACE DETECTION AND TRACKING SYSTEM . . . OR SPADATS (AS WAS EXPLAINED EARLIER) HAS THE SATELLITE WARNING RESPONSIBILITY. THIS SPACE DETECTION AND TRACKING SYSTEM IS ONE SYSTEM COMPOSED OF MANY SYSTEMS. IT IS SUPPORTED BY MANY ELECTRONIC AND OPTICAL DETECTION AND TRACKING DEVICES . . . CALLED SENSORS . . . LOCATED THROUGHOUT THE WORLD. THEIR PURPOSE: . . . TO DETECT, TRACK, AND IDENTIFY ALL SATELLITE VEHICLES . . . AND WITH CONSTANT SURVEILLANCE, PREDICT BOTH FUTURE SATELLITE BEHAVIOR AND POSITION.

THE UNITED STATES AIR FORCE AEROSPACE DEFENSE COMMAND OPERATES THE SPACETRACK SYSTEM, AND THIS IS ONE OF THEIR SITES PICTURED IN THE UPPER LEFT.

USING THE LONG-RANGE HEAVY DETECTION RADARS OF THE BMEWS SYSTEM AT CLEAR, THULE, AND FYLINGDALES, PLUS THE WARNING SENSOR STATION AT SHEMYA IN THE ALEUTIANS, THIS SYSTEM WOULD FIRST DETECT THE LAUNCH OF A SATELLITE VEHICLE FROM THE SOVIET UNION.

SPACETRACK'S OTHER RADAR AND OPTICAL TRACKERS, SUCH AS THIS ONE, WOULD THEN DETERMINE THE ORBITAL CHARACTERISTICS OF THE SATELLITE [redacted].

THE CANADIAN ARMED FORCES' BAKER-NUNN CAMERA (WHICH YOU SAW A PICTURE OF EARLIER) CAN PHOTOGRAPH THE REFLECTION OF OBJECTS IN SPACE NO LARGER THAN A BASKETBALL OUT TO 25,000 MILES IN RANGE. THIS CAMERA TAKES A PICTURE OF THE OBJECT'S TRACE TO FIX ITS EXACT POSITION IN SPACE AGAINST A KNOWN STAR BACKGROUND AT A GIVEN TIME.

THE SPACE SURVEILLANCE, OR SPASUR SYSTEM OF THE UNITED STATES NAVY, PROVIDES ADDITIONAL SATELLITE DETECTION WITH AN ELECTROMAGNETIC FENCE OF HIGH-POWERED RADIO TRANSMITTERS AND RECEIVERS COVERING THE SOUTHERN UNITED STATES. THIS FENCE DETECTS DISTURBANCES CAUSED BY SATELLITE OVERFLIGHT, THUS ENABLING THE DETERMINATION OF ADDITIONAL SATELLITE ORBITAL PATTERNS.

THE SPACE DEFENSE CENTER (HERE) AT NORAD HEADQUARTERS THEN TIES ALL OF THESE VARIOUS COMPONENT SYSTEMS TOGETHER. IT COLLECTS THE CONTRIBUTIONS OF SPACETRACK, SPASUR, THE BAKER-NUNN CAMERAS, AND OTHER SCIENTIFIC SOURCES, AND CONTINUOUSLY CATALOGS AND EVALUATES THE ENTIRE SATELLITE POPULATION.

INCIDENTALLY, THERE ARE, ON THE AVERAGE, 12,000 INPUTS PER DAY TO THE SPACE DEFENSE CENTER FROM THE ENTIRE FREE WORLD MILITARY AND SCIENTIFIC COMMUNITY.

WE HAVE NOW DISCUSSED DETECTION AND DETERMINATION OF INTENT.

THE CLIMAX OF ANY AIR DEFENSE EFFORT IS THE ACTUAL DESTRUCTION OF THE ENEMY, IF HE LAUNCHES AN ATTACK AGAINST US.

OUR CAPABILITY TO DESTROY THE ENEMY VARIES ACCORDING TO THE TYPE OF WEAPON SYSTEM THAT HE EMPLOYS.

AGAINST THE MANNED BOMBER, WE HAVE AN EXCELLENT CAPABILITY. . . . HOWEVER, THE AIR-TO-SURFACE MISSILE CARRIED BY THAT BOMBER CERTAINLY COMPLICATES OUR PROBLEM . . . SINCE THE BOMBER SHOULD PREFERABLY BE DESTROYED BEFORE IT REACHES THE LAUNCH RANGE OF THE MISSILE THAT IT'S CARRYING.

NORAD HAS A FAMILY OF WEAPONS TO DESTROY BOMBERS, AND THESE INCLUDE THE MANNED INTERCEPTORS . . . OF LONG AND MEDIUM RANGE, THE BOMARC SURFACE-TO-AIR MISSILES, OF MEDIUM RANGE, AND THE NIKE HERCULES AND HAWK SHORT-RANGE SURFACE-TO-AIR MISSILES FOR TERMINAL DEFENSE.

HERE ARE SOME OF THE FIGHTERS IN USE TODAY IN NORAD . . . PROVIDED BY THE UNITED STATES AIR FORCE AEROSPACE DEFENSE COMMAND AND THE CANADIAN ARMED FORCES AIR DEFENCE COMMAND:

THE F-101 "VOODOO," SUPERSONIC IN SPEED CAPABILITY (THAT IS, IT TRAVELS FASTER THAN THE SPEED OF SOUND), CARRIES A CREW OF TWO -- A PILOT AND RADAR OPERATOR . . . WHILE THE CANADIAN VERSION, THE CF-101, ALSO CALLED THE "VOODOO," IS THE PRIMARY CANADIAN ARMED FORCES AIR DEFENCE WEAPON.

THE F-102, CALLED THE "DELTA DAGGER" . . . IS A SINGLE-PLACE AIRCRAFT, ALSO SUPERSONIC IN SPEED CAPABILITY, AS ARE ALL OF THESE INTERCEPTORS. IT HAS A FIRE CONTROL SYSTEM THAT AUTOMATICALLY LOCKS ON TO THE TARGET, ARMS, AND FIRES THE DEFENSIVE WEAPONS.

THE AIR NATIONAL GUARD ALSO PROVIDES NORAD WITH A NUMBER OF FIGHTER INTERCEPTOR SQUADRONS COMPOSED PRIMARILY OF THE F-102 DELTA DAGGERS AND TWO F-89 SCORPION SQUADRONS.

THESE FIGHTERS ARE ARMED WITH VARIOUS COMBINATIONS OF AIR-TO-AIR MISSILES, AND HERE FOR YOU IS A QUICK REVIEW OF THESE MISSILES.

FIRST, THE SIDEWINDER, SHOWN ON THE WINGTIP POSITION OF THE F-104. . . . THE SIDEWINDER USES THE PASSIVE, INFRARED PRINCIPLE OF GUIDANCE; THAT IS, IT WILL HOME ON THE HEAT EMITTED BY THE ENGINES OF THE TARGET AIRCRAFT. IT USES A CONVENTIONAL HIGH-EXPLOSIVE WARHEAD.

NEXT, WE HAVE FIVE SIMILAR TYPES OF GUIDED AERIAL MISSILES, ALL CALLED FALCONS. ONE FALCON IS SHOWN IN THE EXTENDED POSITION BENEATH AN F-102, ANOTHER FALCON IS FURTHER BACK IN THE ARMAMENT BAY, WHILE STILL OTHERS ARE CARRIED ON THE OTHER SIDE OF THE AIRCRAFT. THESE FALCONS USE TWO TYPES OF GUIDANCE SYSTEMS: SOME CARRY THE PASSIVE INFRARED GUIDANCE, WHILE OTHERS CARRY A RADAR SEEKER IN THE NOSE OF THE MISSILE. ONE OF THESE FIVE TYPES OF FALCONS IS ARMED WITH A NUCLEAR WARHEAD.

FINALLY, WE HAVE THE "GENIE" MISSILE . . . A LARGE UNGUIDED AIR-TO-AIR ROCKET WITH A NUCLEAR WARHEAD. . . . NORAD AIRCRAFT CARRYING THE GENIE ROCKET AS PRIMARY ARMAMENT ARE THE F-101, THE CANADIAN VERSION -- THE CF-101 -- AND THE F-106.

IN ADDITION TO THE FIGHTER-INTERCEPTOR AIRCRAFT WITH THEIR COMPLEMENT OF AIR-TO-AIR MISSILES, NORAD HAS A STRONG SURFACE-TO-AIR MISSILE FORCE. THE ONE WITH THE GREATEST RANGE IS THE BOMARC, USED BY BOTH THE UNITED STATES AIR FORCE AND THE CANADIAN ARMED FORCES. IT IS A ROCKET BOOSTED, RAM-JET POWERED MISSILE OPERATING WITHIN A 400-MILE RANGE AT A SPEED OF MACH 2.8 (ALMOST 2,000 MPH). IT CAN DESTROY TARGETS WELL ABOVE 70,000 FEET, AND IS EQUIPPED WITH A NUCLEAR WARHEAD.

NORAD ALSO EMPLOYS THE UNITED STATES ARMY AIR DEFENSE COMMAND NIKE HERCULES AND HAWK GROUND-TO-AIR MISSILES IN A NUMBER OF DEFENSE COMPLEXES.

THE NATIONAL GUARD AND THE ACTIVE ARMY MAN THESE BATTERIES IN 16 STATES FOR THIS DEFENSIVE MISSILE SYSTEM.

TURNING TO THF MISSILES, THE NIKE HERCULES WILL START OPERATING ON THE ENEMY BOMBER AS IT APPROACHES TO WITHIN APPROXIMATELY 85 MILES OF THE TARGET AREA AND HAS SUCCESSFULLY INTERCEPTED TARGETS ABOVE 100,000 FEET. THE NIKE HERCULES MAY BE ARMED WITH EITHER THE CONVENTIONAL OR THE NUCLEAR WARHEAD.

THE "HAWK" MISSILE SYSTEM IS MORE MOBILE THAN THE NIKE HERCULES AND CAN INTERCEPT VERY LOW FLYING ENEMY BOMBERS VIRTUALLY DOWN AT TREETOP LEVEL. THE HAWK, WHICH IS A TERMINAL DEFENSE WEAPON, HAS A RANGE OF ABOUT 20 MILES, AND IS EQUIPPED WITH A HIGH-EXPLOSIVE WARHEAD.

NORAD ALSO FEELS THAT IN THIS ERA OF SUPERSONIC FLIGHT, WITH ENEMY BOMBERS SUCH AS THE BLINDER, CAPABLE OF USING SPEEDS ABOVE MACH 1 IN A DASH TO THEIR TARGETS, WE NEED TO TIE ALL OF OUR COMPONENT WARNING SYSTEMS AND WEAPON SYSTEMS TOGETHER INTO ONE EFFECTIVE AND COHESIVE DEFENSIVE FIGHTING FORCE.

TO ASSIST US IN ACHIEVING THIS, WE USE A SYSTEM CALLED SAGE. . . OR SEMI-AUTOMATIC GROUND ENVIRONMENT. THIS SYSTEM USES HIGH-SPEED DATA PROCESSING COMPUTERS TO AUTOMATICALLY COLLECT, CORRELATE, AND DISPLAY ALL AIR DEFENSE INFORMATION.

THE INFORMATION FOR THE COMPUTERS COMES FROM ALL OF OUR WARNING SYSTEMS AGAINST THE MANNED BOMBER; FROM THE HEAVY DETECTION RADARS OF ALL KINDS; FROM THE AIRBORNE EARLY WARNING AND CONTROL AIRCRAFT; FROM THE FEDERAL AVIATION ADMINISTRATION (IN THAT CORRELATION OF FLIGHT PLANS DISCUSSED EARLIER); AND FROM THE CANADIAN COUNTERPART OF THE FAA, THE DEPARTMENT OF TRANSPORT (OR DOT). THE COMPUTER CAN FURNISH GUIDANCE INSTRUCTIONS DIRECTLY TO THE INTERCEPTOR AIRCRAFT (THROUGH THAT SYSTEM OF DATA LINK) AND TO THE BOMARC SURFACE-TO-AIR MISSILES. IT ALSO PROVIDES ENGAGEMENT INFORMATION TO THE NIKE HERCULES AND HAWK MISSILE SYSTEMS.

HERE IS A LOOK AT ONE OF THE SAGE COMPUTERS WHICH REPRESENTS THE VERY HEART OF THIS SOPHISTICATED ELECTRONIC DEFENSIVE SYSTEM. THE COMPUTER COLLECTS INFORMATION AUTOMATICALLY, CORRELATES IT ALMOST INSTANTANEOUSLY AGAINST KNOWN AND PROGRAMMED INFORMATION, AND PRESENTS IT TO THE REGION AND DIVISION COMMANDERS AND THEIR BATTLE STAFFS FOR THE ENGAGEMENT DECISION.

NOW WHILE WE USE COMPUTERS EXTENSIVELY, AND COULD NOT OPERATE AS EFFECTIVELY WITHOUT THEM . . . THEY DO NOT MAKE DECISIONS . . . THE MAN MUST ALWAYS MAKE THE DECISION.

IN THIS ROOM IN THE SAGE DIRECTION CENTER, THE DATA FROM THE AIR DEFENSE AREA IS PRESENTED BY THE COMPUTER . . . BOTH ON THE CONSOLES OF THE BATTLE STAFF . . . AND SIMULTANEOUSLY ON THE OVERALL ELECTRONIC DEFENSIVE SITUATION MAP. THE BATTLE STAFF SELECTS THE DEFENSIVE WEAPON TO BE USED, THE SEQUENCE OF EMPLOYMENT, AND INFORMS THE COMPUTER. ACTING ON THIS SELECTED DECISION INFORMATION, THE COMPUTER CAN THEN ISSUE THE APPROPRIATE INSTRUCTIONS TO THE WEAPON SYSTEMS.

THE SAGE SYSTEM IS COORDINATED TO OPERATE IN SUPPORT OF NORAD'S DEFENSE IN DEPTH CONCEPT. WE WANT TO HIT THE ENEMY AS FAR OUT AS POSSIBLE AND CONTINUE TO INCREASE DEFENSIVE PRESSURES AS HE APPROACHES THE TARGET AREAS. THIS IS APPROPRIATE FOR ALL OF OUR WEAPON SYSTEMS, BOTH NOW AND IN THE FUTURE.

FOR EXAMPLE, AS AN ENEMY BOMBER FORCE MIGHT APPROACH ITS TARGETS HERE IN NORTH AMERICA . . . RADAR CONTROLLERS IN THE SAGE BUILDING DIRECT OUR LONGEST RANGE AIR DEFENSE WEAPONS, THE FIGHTER-INTERCEPTOR AIRCRAFT, . . . OUT TO ELECTRONICALLY COMPUTED INTERCEPT POINTS AT THE MAXIMUM RANGE OF THE SAGE CONTROL FACILITIES SO THAT THE ENEMY CAN BE DESTROYED OFF OUR SHORE LINES OR OVER UNPOPULATED AREAS. AS ELEMENTS OF THE ENEMY RAID MIGHT PENETRATE THE LONG-RANGE DEFENSES, THE SURVIVING AIRCRAFT WOULD BE MET BY BOMARC MISSILES AND ADDITIONAL FIGHTER INTERCEPTORS, CONTROLLED FROM THE SAGE DIRECTION CENTER.

FINALLY, ANY REMNANTS OF THE ENEMY FORCE THAT MIGHT PENETRATE DEEP INTO THE DEFENDED AREA WOULD BE ENGAGED BY THE NIKE HERCULES AND HAWK MISSILES; AGAIN IN ACCORDANCE WITH INSTRUCTIONS PASSED FROM THE SAGE CENTER.

THESE SAGE CENTERS FORM A PART OF A VAST COMMUNICATIONS NETWORK DEVELOPED BY THE UNITED STATES AIR FORCE AEROSPACE DEFENSE COMMAND FOR THE VITAL OPERATIONAL MISSION OF NORAD. THIS COMMUNICATION NETWORK LINKS THE NORAD COMBAT OPERATIONS CENTER (HERE IN COLORADO SPRINGS) WITH EACH OF ITS COMPONENTS IN NORTH AMERICA AND WITH SUPPORTING UNITS THROUGHOUT THE WORLD.

TURNING NOW TO WARNING OF HOSTILE SPACE ACTIVITIES, THE ANNOUNCEMENT BY PRESIDENT JOHNSON IN 1964 OF OUR SATELLITE INTERCEPTION AND DESTRUCTION CAPABILITY, INDICATES CLEARLY THAT IT IS POSSIBLE TO INTERCEPT AND DESTROY A HOSTILE WEAPON IN SPACE, SHOULD AN ENEMY ATTEMPT TO PUT ONE THERE.

THE THOR HAS BEEN EFFECTIVELY TESTED AGAINST SEVERAL OF OUR UNITED STATES SATELLITES, PASSING CLOSE ENOUGH TO THE SATELLITE TO BRING IT WELL WITHIN THE DESTRUCTIVE RADIUS OF THE DEFENSIVE MISSILE WARHEAD.

THIS COMPLETES OUR DESCRIPTION OF CURRENT AIR DEFENSE OPERATIONS; AND TO QUICKLY SUMMARIZE OUR CAPABILITIES FOR YOU: IN THE AIR DEFENSE OF NORTH AMERICA, NORAD CAN ACCOMPLISH THE FOLLOWING:

WE CAN DETECT, DETERMINE THE INTENTION OF, AND DESTROY THE MANNED BOMBER.

WE CAN DETECT, DETERMINE THE INTENTION OF, AND PROVIDE A WARNING AGAINST INTERCONTINENTAL BALLISTIC MISSILE ATTACK OVER OUR NORTHERN POLAR REGIONS, AND . . . WE CAN DETECT THE LAUNCHING OF SATELLITES; WE CAN PREDICT THEIR ORBITS AND THEIR FUTURE POSITIONS.

AND NOW, TO THE FUTURE. WE MUST BE PREPARED TO COUNTER ADVANCED ENEMY CAPABILITIES, SUCH AS THE POSSIBLE EMERGENCE OF RED CHINA AS A MAJOR THREAT, AND AT THE SAME TIME MOVE FORWARD WITH THE DEVELOPMENT OF OUR OWN TECHNOLOGY.

_____ WILL GIVE YOU A LOOK INTO THE FUTURE OF AIR DEFENSE.

THE NORAD STORY

(Future Requirements)

UP TO THIS POINT, OUR BRIEFING HAS BEEN A FACTUAL PROTRAYAL OF THE CHANGING THREAT THAT FACES US, OUR TWO-NATION, MULTI-SERVICE ORGANIZATION; AND THE TOOLS, TACTICS, AND TECHNIQUES THAT WE USE TO DEFEND NORTH AMERICA. WE WOULD LIKE NOW TO LOOK INTO NORAD'S FUTURE.

SHOULD THE ENEMY DECIDE TO INITIATE GENERAL WAR, WE BELIEVE THAT HE WOULD COMMENCE HOSTILITIES WITH A SURPRISE MISSILE ATTACK, FOLLOWED AS CLOSELY AS POSSIBLE WITH A BOMBER STRIKE. ALTHOUGH WE BELIEVE THAT MAJOR DAMAGE COULD RESULT FROM SUCH AN ATTACK, OUR COMMAND AND CONTROL SYSTEM MUST BE CAPABLE OF SURVIVING THIS INITIAL MISSILE ATTACK.

THIS SURVIVABILITY MAY BE ACHIEVED BY SEVERAL METHODS: COMMAND AND CONTROL CENTERS CAN BE "HARDENED," THAT IS, PLACED IN DEEP UNDERGROUND SHELTERS . . . OR, SURVIVABILITY CAN BE ENHANCED BY USING ALTERNATE FACILITIES . . . OR BY MOBILITY, THROUGH THE USE OF GROUND OR AIR-BASED PLATFORMS.

OUR ORIGINAL COMBAT OPERATIONS CENTER IN DOWNTOWN COLORADO SPRINGS, WHICH WAS THE VERY HEART AND NERVE CENTER OF OUR ENTIRE DEFENSIVE SYSTEM, WAS ABOVE GROUND, AND, AS SUCH, WAS CERTAINLY VULNERABLE TO BALLISTIC MISSILE ATTACK. FOR THIS REASON WE'VE BUILT AND ARE NOW OPERATIONAL IN AN UNDERGROUND "HARDENED" OPERATIONS CENTER DEEP IN CHEYENNE MOUNTAIN.

NOTE: If COC briefing is to be given by the CMC Special Projects Officer, use paragraph one (1).

If no COC briefing is to be given by Special Projects Officer, present COC portion starting on next page.

(GO ON A WALK THRU & BE BRIEFE

(1) YOU WILL (RECEIVE A DETAILED BRIEFING ON THIS NEW COMBAT CENTER FOLLOWING THIS PRESENTATION. THEREFORE, I WON'T COMMENT FURTHER ON OUR CHEYENNE MOUNTAIN COMPLEX.

TO ACHIEVE SURVIVABILITY THROUGH THE USE OF ALTERNATE FACILITIES, WE ARE PRESENTLY INSTALLING AN AUSTERE AUTOMATED BACKUP TO OUR SAGE SYSTEM THAT IS KNOWN AS BACKUP INTERCEPTOR CONTROL OR "BUIC."

THE PRIMARY OBJECTIVE OF BUIC IS SURVIVABILITY OF CONTROL IN THE EVENT WE SHOULD LOSE IMPORTANT ELEMENTS OF OUR COMMAND AND CONTROL SYSTEM. IT WILL PROVIDE IMPROVED SURVIVABILITY PRIMARILY THROUGH REDUNDANCY INASMUCH AS THERE WILL BE MANY OF THESE BUIC CONTROL CENTERS, ALL TIED TOGETHER IN SUCH A MANNER AS TO MINIMIZE DEGRADATION OF CONTROL FROM THE LOSS OF ANY ONE SAGE SITE . . . . OUR NEXT GOAL IS TO IMPROVE THE BUIC SYSTEM TO GAIN SUFFICIENT CAPACITY AND FLEXIBILITY TO ALLOW US TO DECOMMISSION SOME OF OUR MORE VULNERABLE SAGE CENTERS . . . SUCH AS THIS SAGE BLOCK HOUSE PICTURED HERE.

IN ADDITION TO BUIC, AS A LONG-TERM OBJECTIVE WE HOPE TO PROVIDE ADDITIONAL COMMAND AND CONTROL SURVIVABILITY THROUGH THE USE OF A SYSTEM KNOWN AS "AWACS," OR AIRBORNE WARNING AND CONTROL SYSTEM.

WHILE BUIC ACHIEVED SURVIVABILITY THROUGH THE USE OF ALTERNATE FACILITIES, AWACS WILL BE SURVIVABLE THROUGH MOBILITY. THE SYSTEM WOULD BE USED PRIMARILY TO EXTEND THE CONTIGUOUS COVERAGE RADAR NETWORK AND PROVIDE OFFSHORE BATTLE MANAGEMENT, AND IT WOULD ALSO BE USED TO REPLACE ELEMENTS OF OUR LAND-BASED SURVEILLANCE AND CONTROL SYSTEM THAT MIGHT BE DESTROYED OR DISABLED.

TO FURTHER ASSURE THE SURVIVAL OF NORAD COMMAND AND CONTROL, WE HAVE ESTABLISHED ALTERNATE NORAD COMMAND POSTS AT VARIOUS LOCATIONS THROUGHOUT THE CONTINENT, CAPABLE OF ASSUMING THE FUNCTIONS OF THE NORAD COC AND DIRECTING THE DEFENSIVE BATTLE IF NECESSARY.

TO RECAPITULATE THEN, THESE ARE SOME OF THE IMPROVEMENTS WE ARE CONTEMPLATING AND/OR COMPLETING IN THE FIELD OF SURVIVAL OF OUR COMMAND AND CONTROL SYSTEMS: . . . AN UNDERGROUND COC, BUIC, AWACS, AND OUR DISPERSED ALTERNATE COMMAND POSTS.

THERE IS, OF COURSE, ONE OTHER ASPECT OF SURVIVAL THAT HAS A VERY DEFINITE INFLUENCE ON NATIONAL DEFENSE.

THAT INFLUENCE COMES FROM THE CLOSE RELATIONSHIP BETWEEN NORAD'S ACTIVE MILITARY DEFENSE AND THE PASSIVE CIVIL DEFENSE MEASURES IN THE UNITED STATES AND CANADA.

_____ TOLD YOU THAT THE NORTH AMERICAN WARNING SYSTEM HAS BEEN ESTABLISHED AND IS IN BEING. IN ADDITION TO WARNING, AN EFFECTIVE CIVIL DEFENSE PROGRAM MUST ALSO PROVIDE SHELTER AGAINST THE EFFECTS OF RADIOACTIVE FALLOUT. A CONTINUING SURVEY OF EXISTING STRUCTURES HAD, AS OF _____, ALREADY IDENTIFIED OVER _____ MILLION SHELTER SPACES IN THE U.S. A SIMILAR PROGRAM IS UNDER WAY IN CANADA, IN WHICH ALL FEDERAL PROPERTIES HAVE BEEN SURVEYED, AND A SURVEY OF ALL RESOURCES IN ONE PROVINCE, ALBERTA, HAS BEEN COMPLETED TO SERVE AS A MODEL FOR THE OTHER PROVINCES.

I JUST WISH TO ADD THAT WE IN NORAD CONSIDER A STRONG CIVIL DEFENSE TO BE A VERY WHOLESOME COMPLEMENT TO OUR ACTIVE MILITARY DEFENSES, AND, OF COURSE, WE WOULD LIKE TO SEE IT PROGRESS.

LET'S NOW TAKE A LOOK AT SOME OF OUR LATEST DETECTION AND WARNING SYSTEMS.

TO MAINTAIN A CONTINUOUS WATCH ON THE GROWING SATELLITE POPULATION (MENTIONED EARLIER BY _____), ADDITIONAL SPACE SURVEILLANCE DEVICES ARE BEING DEVELOPED BY THE USAF AEROSPACE DEFENSE COMMAND FOR THE SPACE DETECTION AND TRACKING SYSTEM.

ONE OF THE NEWEST SENSORS IS THE FPS-85 PHASED ARRAY RADAR NOW BEING INSTALLED AT EGLIN AFB, FLORIDA. THIS IS AN ELECTRONICALLY STEERABLE RADAR WHICH LOOKS TO THE SOUTH, AND IS PROGRAMMED TO GO INTO OPERATION IN 1968, AS A PART OF THE SPACETRACK NETWORK. The building housing this new radar is a huge structure, some 13 stories high and over a city block long.

THIS NEW FACILITY IS DESIGNED TO DETECT, TRACK, IDENTIFY AND CATALOG MAN-MADE OBJECTS ORBITING THE EARTH.

NEARLY ALL OF THESE OBJECTS WILL PASS THROUGH THE VIEWING FIELD OF THE FPS-85 RADAR AT LEAST TWICE DAILY. THIS INFORMATION WILL THEN BE COMPUTER PROCESSED AND TRANSMITTED AUTOMATICALLY TO THE NORAD SPACE DEFENSE CENTER IN CHEYENNE MOUNTAIN.

WE DISCUSSED EARLIER THE INCREASING SUBMARINE-LAUNCHED BALLISTIC MISSILE THREAT THAT FACES US. AS YOU RECALL, BMEWS IS ORIENTED TO THE NORTH. IT GIVES US, THEREFORE, NO DETECTION OF SUB-LAUNCHED BALLISTIC MISSILES.

WE WILL BE ABLE TO ACHIEVE A LIMITED DEGREE OF DETECTION AGAINST SUCH MISSILES BY MODIFYING CERTAIN SAGE RADARS ALONG OUR COASTS, AND THESE MODIFICATIONS ARE PRESENTLY BEING ACCOMPLISHED. HOWEVER, AS HAS BEEN ANNOUNCED, NEW RADAR TECHNIQUES HAVE BEEN DEVELOPED WHICH PERMIT US TO EXTEND OUR ELECTRONIC VISION FROM HUNDREDS TO THOUSANDS OF MILES.

THE IONOSPHERE, AN OUTER LAYER OF THE ATMOSPHERE, AND THE EARTH'S SURFACE HAVE REFLECTIVE CHARACTERISTICS. BY BEAMING THE RADAR ENERGY TO BOUNCE ALONG BETWEEN THESE CURVED, REFLECTIVE SURFACES, WE SEND IT FAR OUT "OVER THE HORIZON."

ANY DISTURBANCES CREATED IN THE IONOSPHERE BY MISSILES PASSING THROUGH IT CAN BE DETECTED BY TRANSMITTING HIGH FREQUENCY RADIO SIGNALS ACROSS THE LAUNCH AREA TO THE RECEIVER SITE. ANALYSIS OF THESE SIGNALS THEN PROVIDES DETECTION DATA. AN OPERATIONAL SYSTEM USING THIS TECHNIQUE WILL ALLOW US TO DETECT MISSILE LAUNCHES FROM SUBMARINES, AIRCRAFT FLYING TOWARD OUR CONTINENT, AND MISSILE LAUNCHES FROM OTHER CONTINENTS AS WELL.

FURTHER, THIS COULD INCLUDE A WARNING CAPABILITY AGAINST FOBS, OR FRACTIONAL ORBITAL BOMBARDMENT SYSTEM, SHOULD IT BECOME A REALITY. IT WILL ALSO INCREASE CONFIDENCE IN A BMEWS WARNING AND COULD PREVENT AN ATTACKER FROM MAKING AN "END RUN" OF BMEWS. WITH THIS IMPROVED RADAR TECHNIQUE, THE O-T-H SYSTEM WOULD ADD PRECIOUS MINUTES TO OUR WARNING TIME AGAINST MISSILES AND AIRCRAFT APPROACHING OUR NORTH AMERICAN CONTINENT. THUS, FOR THE FIRST TIME, "ALL AROUND" DETECTION LOOKS FEASIBLE WITH THIS NEWLY DEVELOPED WARNING SYSTEM.

THIS, THEN, IS THE FUTURE OF THE AIR DEFENSE OF NORTH AMERICA.

WE WILL CONTINUE TOWARDS THE ACHIEVEMENT OF A HIGH DEGREE OF SURVIVABILITY FOR ALL OF OUR DEFENSIVE SYSTEMS, PARTICULARLY IN THE FIELD OF COMMAND AND CONTROL.

AND, WE HAVE NOW DEVELOPED A RADAR THAT CAN SEE OVER THE HORIZON, WHICH SHOULD GREATLY INCREASE OUR DETECTION CAPABILITY AGAINST ALL TYPES OF MISSILES AND AIRCRAFT.

(LADIES AND) GENTLEMEN, THIS IS NORAD AND ITS OMPONENTS . . . WHERE WE ARE TODAY, AND WHERE WE MUST GO TOMORROW IF WE ARE TO CONTINUE TO PROVIDE A DEFENSIVE FACTOR TO OUR NORTH AMERICAN DETERRENCE EQUATION.

-- THE END --