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**Item Description:** This document contains point-form lecture typed notes that Lindsey wrote pertaining to the development of NORAD from the 1960s to the 1980s. NORAD's integration with NATO is a key component of this document.

**Keywords:** NATO; Canadian air involvement; integrated air and naval strategy; nuclear exchange; sustained air operations

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SUSTAINABLE AIR POWER

Planning in the 1960s

During 1960s NATO planned on the assumption that the most probable threat was nuclear war, expected to be devastating.

Strategy was to deter all war in Europe, by threat of nuclear destruction as the probable consequence

- necessary means was capability for certain rapid and devastating nuclear retaliation for aggression by the WP.
- air forces had the major role, with nuclear-armed bombers and long range missiles.
- emphasis on early warning of an enemy strategic nuclear strike, with instant readiness to deliver a retaliatory strategic nuclear strike.
- Canadian Air involvement in that period was nuclear-armed CF-104s in Europe, (some on QRA), plus NORAD, featuring constant readiness

DEW line, MCL, Pinetree Radar, interceptors

(9 squadrons CF-100 AWF, later reduced number of CF-101B)

BOMARC (Voodoo and BOMARC with nuclear weapons)

If deterrence failed, expected catastrophic damage

- most airfields unusable
- most seaport cargo handling destroyed
- most industry crippled and unable to get supplies

Both ability and will to fight on for long after nuclear exchange in grave doubt.

Hence little requirement seen for long sustainability

- need enough to resist conventional attack for a few days
- assume that conventional war would soon escalate to strategic nuclear war

NATO provided limited ammunition stockpile in Europe, no strategic reserve.

Provision for continuing sea supply had priority below that for SSBNs, aircraft carriers

- but NATO navies worried more about a long war than air force (perhaps because sea supply would be of limited importance in a short war, but crucial in a long one).

Air forces put less emphasis on airlift and air defence than on strike.

NATO was not prepared for a long war

### Planning in the 1980s

As the offensive nuclear arsenals built up on both sides, with no corresponding capability to defend against them, questions began to be asked about the inevitability of rapid escalation to strategic nuclear war

- would the desire to avoid nuclear war produce a demand for stronger conventional defence?
- was there a possibility of mutually agreed substantial reductions in nuclear weapons?
- very recently, the nightmare of "nuclear winter" has provided further dissuasion from large scale use of nuclear weapons.
- would either side dare to initiate the use of nuclear weapons?

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To be more specific, the WP conventional ground and air forces are configured for attack, and can be reinforced and resupplied faster than NATO's

- they have a good opportunity to achieve surprise (although inversely proportional to the degree of pre-hostilities buildup)
- they would hope for early success using conventional arms only
- why should they initiate use of nuclear weapons?

NATO would, presumably, resist a conventional attack by conventional defence as long as it could

- reserve the right and preserve the capability for "flexible response" by initiating use of nuclear weapons
  - could be defensive use (e.g. nuclear artillery)
  - could be selective employment (e.g. vs WP airfields)
- but would prefer to have conventional forces strong enough to hold WP conventional attack indefinitely, without recourse to nuclear weapons.

WP has LRINF (SS 20, Backfire) capable of threatening not only NATO airfields and other military assets, but also population and industry anywhere in Europe.

But NATO is acquiring its own LRINF (P II, GLCM) capable of threatening similar military and civilian assets as deep as Western USSR

- capable of severe damage to WP without having to escalate to use of intercontinental forces based in America

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- these European INF forces could deter each other completely
  - or, conceivably, limited use would stop at a standoff without the final escalation to the intercontinental forces

In summary, there are many reasons to believe that the probability of an all-out nuclear exchange has gone down, at least as something likely to occur at or near the commencement of hostilities

- but the relative probability of a protracted conventional war has gone higher,
- and also of a protracted war in which limited nuclear exchanges take place.

NATO still puts top priority on deterrence of war,

- but has to face the possibility that the WP may initiate a war that they would attempt to win by conventional means only, even if it lasted for months or years
- to deter such a plan, NATO conventional forces must have sustainability, so that WP planners will not be confident of outlasting the West.

#### Capability for Sustained Air Operations

US SAC would need to be able to remain ready to strike through extended period of conflict

- possibly even when nuclear weapons were being employed on limited scale

- need to survive EMP
- dispersal of bomber aircraft. Use of airfields in Canada.
- airborne alert (armed?).

NORAD would need to be able to continue operations through extended period of high threat

- intrusion of North American air space by recce aircraft
- intensified activity in space, including ASAT, possible loss of warning and communications satellites
- continued deployment of interceptors to forward bases
  - use of Canadian bases by USAF interceptors, AWACS, tankers
- need to survive EMP
- could not keep key personnel on duty indefinitely
  - what protracted use of Airborne Command Posts?
- possible effects of electronic warfare
- altered patterns of civil and military air traffic?
- employment of AWACS
- possible threat of cruise missiles
- changed rules of engagement?

Employment of combat aircraft in Europe

- would have to endure attrition of aircraft sent on conventional missions

6.

- reserve a portion of DCA for nuclear operations?
- need for good battle damage repair
- would have to endure damage to airfields
  - need for repair of runways, maintenance facilities, stockpile of spare parts
  - maximum dispersal to alternate airfields
  - advantages of VSTOL aircraft
- possible need to continue conventional operations after chemical attacks on airfields
  - worse losses of personnel than equipment?
- operational mobility for squadrons (maintenance, fuel, personnel, etc.)
- need for replenishment of all types of ammo
  - sophisticated ASMs, AAMs,
  - iron bombs
  - cannon shells
  - ammo for ground-based AA

#### Maintaining Sustained Airlift

- large fuel needs at receiving end, in time of severe POL shortage

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- need for fighter escort
- air defence of airfields
- advantages of STOL

#### Sustained Maritime Air Patrol

- fighter protection
- air defence of airfields
- use of unfamiliar airfields
- need for very large supply of sonobuoys
- probable lack of SOSUS input (SURTASS ?)
- anti surface-ship role?

#### Employment of Reserves

- should be trained in roles which they can fill quickly and effectively
  - transport ?
  - ground radar

#### Training Requirements

- remember Empire Air Training Plan
- available for European allies?
- technicians, increasing maintenance men hours per flying hour
- need for simulators