



Te Matataua

The Scouting Party of Air Power

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Fuel Security

The recent Marsden Point oil pipe rupture highlights the criticality of fuel in maintaining military air operations

Aviation fuel is the life blood of an air force and targeting the means of production, storage and distribution is usually amongst the highest priorities of attacking forces during war. Once the level of production and supply of fuel is reduced below the level of consumption, the ability of a country to defend itself using air power is severely reduced, as is its capacity to sustain civilian and military logistic transport.

The recent rupture of the Marsden Point oil refinery pipeline to Wiri highlighted the critical role of fuel in maintaining commercial flight schedules and military air operations. The NZDF was in a position to divert fuel stocks, personnel and tanker resources to help reduce the impact on commercial aviation operations but in doing so military activity was affected. Exercises

were suspended, flying and parachute training was cancelled and non-essential travel was halted. How would the situation have played out had the NZDF been fully committed to supporting a disaster relief operation in the Pacific, or sustaining a contribution to a conflict overseas that required high-tempo flying training in New Zealand and regular air mobility flights to a theatre of war from Whenuapai?

Military strategy considers aviation fuel to be critical to maintaining defensive, and offensive, air operations. If a state is denied access to aviation fuel, they may lose control of the air and cannot defend their territory with fighter aircraft. Having

control of the air allows ones forces to manoeuvre relatively unimpeded within a battlespace - on the ground, at sea, and in the air - while denying that freedom of manoeuvre to the enemy. Two case studies from World War Two are useful examples to highlight the strategic importance of fuel and the effects fuel shortages have on air power.

Germany learned a hard lesson from World War One where the shortage of oil was a major factor in

their collapse and was one of the reasons they asked for Armistice. Later, Nazi planners made the provision of liquid fuel for the armed forces an essential part of re-establishing their war machine.

In 1938 Germany planned for the production of 3 million tons of aviation fuel per year including the storage

of 1.5 million tons. As Germany had no oil fields but did have abundant coal deposits, the bulk of aviation fuel was made at synthetic fuel plants using a high-pressure coal hydrogenation process. This reduced Germany's reliance on imported fuel, which mainly came from refineries in Romania.

The Strategic Oil Offensive was devised by the Allies to deny oil to Germany. A sea blockade was imposed to stop fuel being imported to Germany, and air attacks on oil production and storage was carried out. By May 1943 some 5000 tons of bombs were dropped against Germany's oil targets including a bold long-range mission mounted by the USAAF on 1st August 1943, flying 2000 miles



USAAF B-24 attacking Ploesti oil refinery 1943

(3700km) from North Africa across the Mediterranean and Yugoslavia to bomb Romanian oil refineries at Ploesti.¹ Bomb tonnage increased to 235,000 tons as the oil offensive intensified in 1945. Bombing concentrated on hitting the main hydrogenation plants to paralyse the German air force as they were primarily dependent on synthetic fuel.² Lack of aviation fuel almost grounded the Luftwaffe, seriously impeding their ability to operate and train. This allowed the Allies to control the air over Germany thereby enabling freedom of manoeuvre on ground.

Japan has no oil fields and was totally reliant on imported fuel and bulk fuel storage to operate its war machine. An oil embargo placed on Japan in August 1941, to curb its expansion in China, led to Japan seeking oil supplies from Indonesia; one of the factors that drove Japan's push into the Asia-Pacific region. Operation Starvation ring-fenced Japan from sea access and by February 1945 fuel imports to Japan had been stopped causing oil-burning shipping to be laid-up, pilot training to be severely reduced and warships to stay in port. Like the Luftwaffe, the Imperial Japanese Army Air Force was effectively grounded; they had lost control of the air.

New Zealand, much like Germany and Japan, was and still is reliant on imported oil though a small percentage is sourced locally. During World War Two we felt the impact of reduced access to fuel as imports decreased from around 110 million gallons of petrol in 1939 to a low of around 60 million gallons in 1942. An Oil Fuel Controller position was established by the New Zealand Government to manage consumption and ensure fuel was provided to essential industrial and commercial users.³

Stocks of fuel held in NZ ranged between 25 and 30 million gallons. In 1939, the Petroleum Storage Board, consisting of members of the Army, Navy, Air Force and Harbour boards, proposed the establishment of 17 aviation fuel depots around the country of which 15 were eventually built, including



WW2-era fuel storage tank at Paekakariki

Ohakea, Whenuapai, Lyttleton and Paekakariki.

The Marsden Point refinery was built in the 1960's as demand for oil products grew to the point of it being economically viable, and it currently refines all of New Zealand's jet fuel. As has been recently demonstrated, single-source supply can be highly vulnerable; simple failures can have disproportionate effect.

National security is also vulnerable to fuel crises like the Arab oil embargo of 1973 and piracy. The oil embargo sent oil prices sky-high causing a recession. Oil tankers have succumbed to piracy in the South China Sea and West Coast of Africa, though recent anti-piracy efforts have reduced the incidence of capture. The New Zealand government has an oil emergency response strategy⁴ that guides its response to a crisis; including rationing, discouraging hoarding and prioritising the allocation of fuels.

Defence White Paper 2016 clearly articulates the importance of trade to New Zealand's prosperity. Within world shipping lanes, freedom of passage is assisted by NZDF deployments, RNZAF P-3K2 Orion surveillance aircraft, and RNZN frigates, to secure sea lines of communication, conduct counter-piracy operations, and sea control operations. These operations help to ensure the continued availability of fuel in times of peace, and at war.

Key Points

- Air Power is reliant on aviation fuel and it is a primary target during war.
- Bulk fuel storage and rationing are tools to ensure fuel is available for air operations.
- The Defence White Paper reinforces the importance of defending shipping lanes.

References

1. The Air Campaign by J. Warden and Strategic Air Warfare, USAF Warrior Studies.
2. War, Economy and Society 1939-1954 by A. Milward.
3. Official History of NZ in the Second World War – War Economy.
4. NZ oil emergency response strategy of 2008, Ministry of Economic Development.

APDC Update

APDC periodicals are now available on the internet. New Zealanders' interested in air power may visit the APDC page of the RNZAF website: www.airforce.mil.nz/about-us/who-we-are/apdc

Test your air power knowledge by answering the quiz questions in Air Force News.

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