

621<sup>st</sup> Radio Intercept Company intercept detachment, Afrika Korps, c1942.



Recommended Reading List

LAND ELECTRONIC WARFARE  
AND  
MILITARY SIGNALS INTELLIGENCE  
(HISTORICAL LEARNING)

Warrant Officer Class Two

Mark Wilson

Electronic Warfare Manager

Royal Australian Corps of Signals

## Introduction

Military Signals Intelligence (SIGINT) activities have been conducted in support of military operations since the Great War. The first dedicated capability was established by the Royal Navy just prior to WWI with collect and processing controlled by 'Room 40' at the Admiralty. Initially, focused on the deciphering of German naval traffic, it later incorporated direction finding (DF) techniques to enhance its provision of 'Special Intelligence' to support naval planning at the operational level. Within the first couple of years of the war, the British Army had created Special Wireless Sections (SWS) to collect SIGINT on German forces on the Western Front, later expanding operations to the Middle East and Mesopotamia. Again DF stations were introduced, developed by Captain Henry Round (Intelligence Corps) who had also been responsible for the creation of the Royal Navy's DF chain. The SWS generated operational/theatre level intelligence reporting that was passed to their respective General HQ and it was very much a British affair, except in Mesopotamia, where Australians and New Zealanders made a significant contribution to the SIGINT effort.

During WWII, strategic military SIGINT came to the fore, pioneered by the British Government Code and Cypher School (GC&CS), 'Bletchley Park', and taking on many of the lessons identified by Room 40 during WWI. Again Special Wireless units deployed to operational theatres to conduct Electronic Support operations against enemy communication networks. These Special Wireless units were also known as 'Y' units and were initially most effective during the North Africa campaign. Unlike WWI, the Y units operated at two levels. Firstly they collected high-grade enciphered traffic (i.e. Enigma) which was passed back to Bletchley Park where it was attacked by the cryptanalysts and then processed for dissemination back to theatre commanders via special liaison officers and not via the Y units. This was very much a case of tactical collection in support of a strategic-operational SIGINT effort, similar to modern day 'tactical SIGINT' operations. However, the Special Wireless Sections were accompanied by Special Intelligence Sections and these were able to process and analyse communications sent in clear or in low-grade tactical codes, directly disseminating any intelligence to the tactical commander (normally corps-divisional commanders); the foundation of modern tactical Electronic Warfare (EW) operations.

In the current operating environment, national SIGINT agencies continue to provide support to operational commanders and EW capabilities are widely employed. In some constructs, 'EW' elements support both the SIGINT and EW efforts, while in others, two separate capabilities are deployed concurrently.

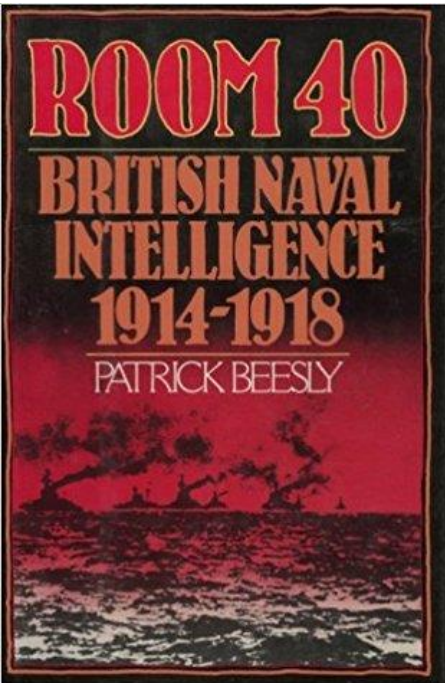
## Why Historical Reading Material

This reading list consists of publications that cover the historical use of and conduct of SIGINT in support of military operations for a couple of reasons. Firstly, as often quoted, "if you do not know where you came from, then you don't know where you are, and if you don't know where you are, then you don't know where you are going". Although, there have been significant advances in communications and in collection technologies many of our best practices have been built on the lessons identified by our predecessors who encountered and overcome some of the fundamental challenges of EW-SIGINT operations; balancing the 'need to know' with 'need to share', secure and timely dissemination, protecting the source and the provision of actionable intelligence. Secondly, due to the secrecy surrounding this source of intelligence, there is much more material for researchers and writers relating to the historical use of SIGINT (some aspects of Bletchley Park's operations were not released until the 1990s), giving a much more accurate interpretation of events. Lastly, it would be inappropriate to comment on the accuracy and validity of modern works, as many are not quite a true reflection of modern day operations.

## ROOM 40: BRITISH NAVAL INTELLIGENCE 1914-1918

Patrick Beesly

ISBN-13: 978-0151786343



**The Author.** Patrick Beesly served with the Royal Naval Volunteer Reserve from 1939 until 1959. During WWII, he was assigned to the Operational Intelligence Centre (OIC) of the Naval Intelligence Division and has written a number of books about naval intelligence in both World Wars. This book is considered by many to be the best written about naval intelligence in WWI.

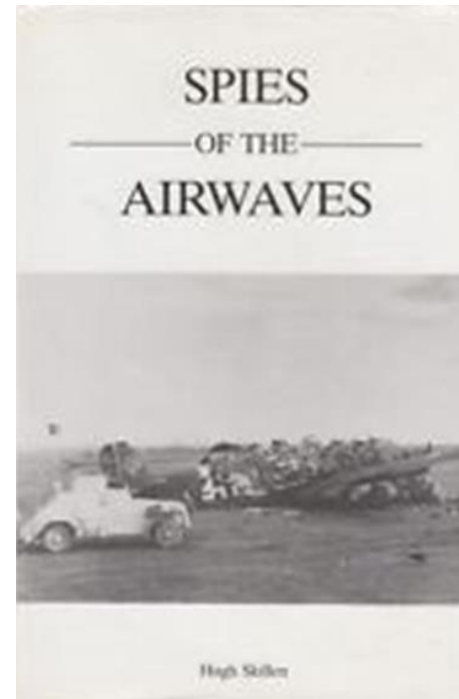
**The Book.** Room 40 was the department of the OIC that pioneered SIGINT in WWI and was the inspiration for the creation of GC&CS (Bletchley Park). The codebreakers of Room 40 attacked enemy naval and diplomatic cyphers and their work directly effected the Easter Uprising of 1916, the Battle of Jutland and the entry of the United States of America into the war.

**Why.** Room 40, not only led the way in cryptanalysis, but it also recognised the need to protect its capabilities and the source of its intelligence. The Germans failed to do this and therefore continually comprised their SIGINT effort. As part of this, it was Room 40 that created the term 'Special Intelligence', a term that is still used today, as a cover-name for SIGINT derived information. It also shows that when handled correctly, military SIGINT can influence both operational and strategic planning.

## KNOWLEDGE STRENGTHENS THE ARM (1990)

Hugh Skillen

ASIN: B0038X98Z4



**The Author.** Hugh Skillen served with the Intelligence Corps during WWII; as a field security NCO during the Battle of France before being commissioned and trained as a SIGINT analyst. He went on to see extensive operational service in North Africa, Italy and in Europe. He wrote a number of historically important books relating to Special Wireless operations and the breaking of the Enigma cypher.

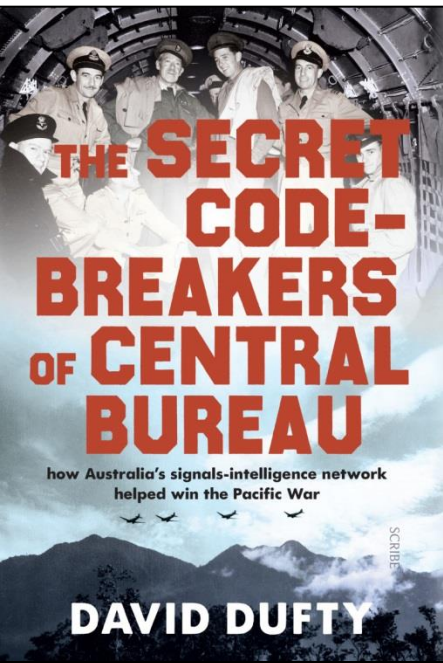
**The Book.** One of the first books to reveal the exploits of the 'Y' tactical units that collected both Enigma traffic for Bletchley Park and conducted EW in support of theatre commanders; predominantly in the North Africa campaign. It also covers the training and integration of U.S., Polish, Australian and Canadian EW units into the operational SIGINT enterprise.

**Why.** Probably still the best publication on how combined EW and tactical SIGINT profiles can support collection requirements at both the tactical and operational level. Confirms the potential of Traffic Analysis and DF to exploit tactical collect; especially when supported by a full understanding of one's enemy. The book also examines the success of Rommel's EW unit in targeting Allied communications and why good OPSEC and COMSEC procedures are vital during operations against a near-peer adversary.

## THE SECRET CODE-BREAKERS OF CENTRAL BUREAU (2017)

David Dufty

ISBN-13: 978-1925322187



**The Author.** David Dufty is a Canberra-based writer and researcher.

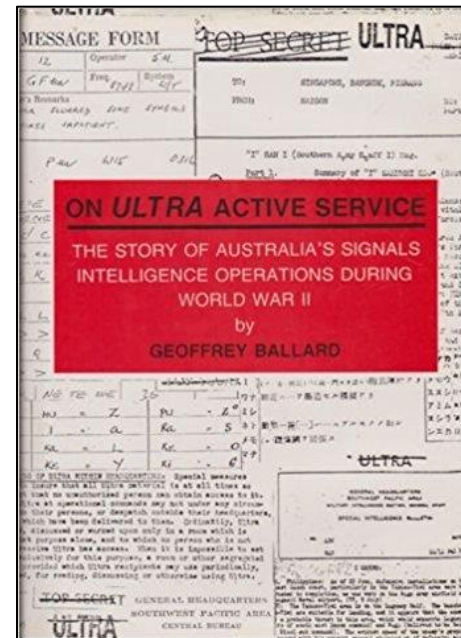
**The Book.** Details how the Central Bureau (CB) came into existence, its work in support of the Pacific campaign and how it later formed the basis of the current Australian Signals Directorate. It's a story about people, inter and intra-service politics, national rivalries and how the CB supported operations. The earlier part of the book draws heavily on the experiences of Geoffrey Ballard and it is not as detailed in its examination of the intelligence produced as 'MacArthur's Ultra'.

**Why.** Gives a great overview of the creation of a national agency that now plays a major role in our strategic intelligence community. It shows how personal, service and national rivalries and prejudices threatened the development of a capability that was clearly in the best interests of a nation at war.

## ON ULTRA ACTIVE SERVICE: THE STORY OF AUSTRALIA'S SIGNAL INTELLIGENCE OPERATIONS DURING WORLD WAR II (1991)

Geoffrey Ballard

ISBN-13: 978-086786274



**The Author.** Geoffrey Ballard served with Australia's first Special Wireless unit in WWII and was the first Australian trained to conduct tactical cryptanalysis. Seeing action in Greece and Crete, he later commissioned and was one of the first to join the US-Australian SIGINT organisation, the Central Bureau. During the war in the Pacific, he was attached to the HQs of General MacArthur and Lord Mountbatten.

**The Book.** The book covers in great detail Ballard's first hand experiences of the war, starting with his recruitment into tactical EW-SIGINT and later involvement in Australia's national SIGINT effort. It also gives details of the other services' role in this endeavour and the close cooperation with US codebreakers.

**Why.** Probably the best book written about the Australian Army's role in EW-SIGINT operations during WWII. Issues relating to training, operational security and the risks of operating in war-zones are made very clear (Ballard's unit lost a number men during the fighting in Crete). It also covers the complexities of running a strategic intelligence organisation in support of a war that had to meet the requirements of all its coalition members at various operational levels.



## MACARTHUR'S ULTRA: CODEBREAKING AND THE WAR AGAINST JAPAN, 1492-1945 (1991)

Edward J. Drea

ISBN-13: 978-0700605767

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MacArthur's  
**ULTRA**  
Codebreaking and the War  
against Japan, 1942-1945  
EDWARD J. DREA

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軍戰師団

**The Author.** Drea is a former USAF intelligence officer who specialised in SIGINT and completed a combat tour in Vietnam. As a military historian, he has written a number of WWII related book dealing with the Japanese Army and the Pacific War.

**The Book.** The book gives a detailed insight to the use of SIGINT by General MacArthur during his campaign in the South Pacific and the creation of his almost personal SIGINT organisation; the Central Bureau. The book follows the campaign from New Guinea to the Philippines and MacArthur's preparations for the invasion of the Japanese mainland. It examines how MacArthur selected his staff, interpreted and utilised SIGINT, the accuracy of the reporting and finally, how SIGINT contributed to the decision to drop the Atomic bomb on Japan.

**Why.** The book uses post-war information to measure the accuracy of the SIGINT available to MacArthur and examines the reasons for discrepancies. Presents an example of how a commander might choose to ignore or accept SIGINT assessments according to his own preconceptions of an enemy's strengths and intentions. In addition, to the implications of selecting 'compliant' staff officers.

## CODEBREAKER IN THE FAR EAST (2002)

Alan Stripp

ISBN-13: 978-0192803863

### Codebreaker IN THE FAR EAST

ALAN STRIPP

0544	
3973	航空教育隊
3782	航空地區司令部
0700	航空特殊無線隊
4698	航空特殊情報隊
9424	航空特殊通信隊
0670	航空通信司令部
3755	航空通信團
6829	
3935	航空路部
4182	航空路部司令部

**The Author.** Stripp served with the Intelligence Corps during WWII. Trained to break Japanese cyphers, he served at Bletchley Park before being posted to India. In later life, he directed the Cambridge University's summer school for British secret intelligence.

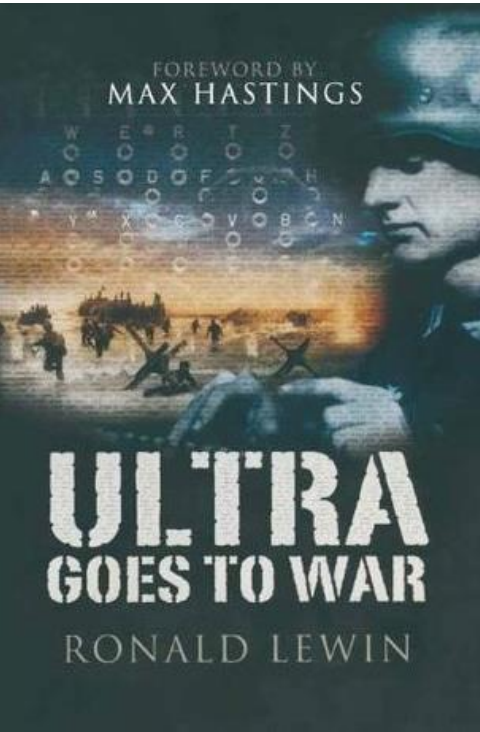
**The Book.** The book is the story of Stripp's wartime career, but gives a detailed account of his selection and training for his role as a codebreaker. The book also examines in detail a number of Japanese wartime codes; how they were structured and how the codebreakers attacked them.

**Why.** Although numerous books have been written about Bletchley Park and US codebreaking operations in the Pacific theatre (i.e. PURPLE), this is one of the few that tells the story of the Allied SIGINT effort in support of operations in India and Burma.

## ULTRA GOES TO WAR (1978)

Ronald Lewin

ISBN-13: 978-0070374539



**The Author.** Lewin served as an artillery officer in WWII and saw active service in North Africa and Europe; he was wounded in action during the Battle of El Alamein. He later life, he wrote of number of books relating to the Second World War and this is considered his best work.

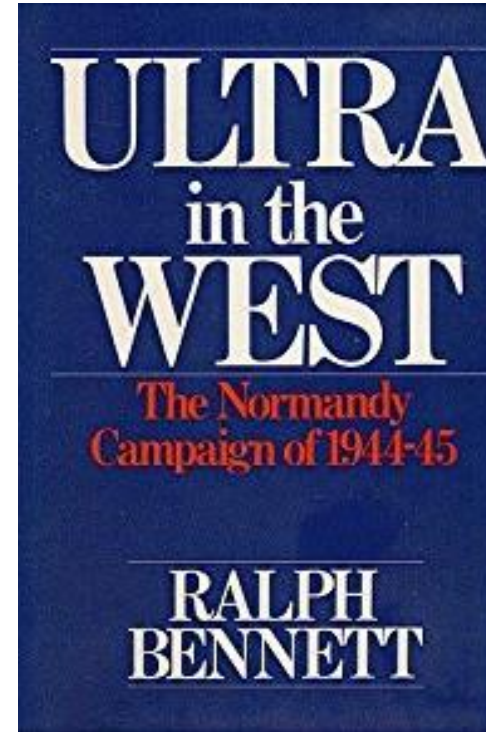
**The Book.** Unlike other works on this subject, Lewin's was the first to examine the intelligence generated from the Enigma decrypts. Instead of retelling the story of how Bletchley Park broke Enigma it gives an insight into how the intelligence was disseminated to theatre commanders and its influence on campaign planning.

**Why.** Many of the points raised in the book are still relevant to today's operations; ensuring effective dissemination of sensitive intelligence whilst protecting the source. It reiterates the principles of using all-source intelligence and not relying on a 'trusted' single source, as some began to do in the case of ULTRA material. Some commanders ignored ULTRA, at some cost, while others became addicted to it, ignoring all other sources, again to their detriment.

## ULTRA IN THE WEST: THE NORMANDY CAMPAIGN OF 1944-45

Ralph Bennett

ISBN-13: 978-0700605767



**The Author.** Bennet was a Cambridge historian and former Intelligence Corps officer, who served at Bletchley Park for four years.

**The Book.** Similar to Lewin's 'Ultra Goes to War' this book examines the influence of Ultra intelligence on operations, but in much greater detail. It is able to do this, as it looks at only the European campaign from the D-Day landings to Germany's surrender.

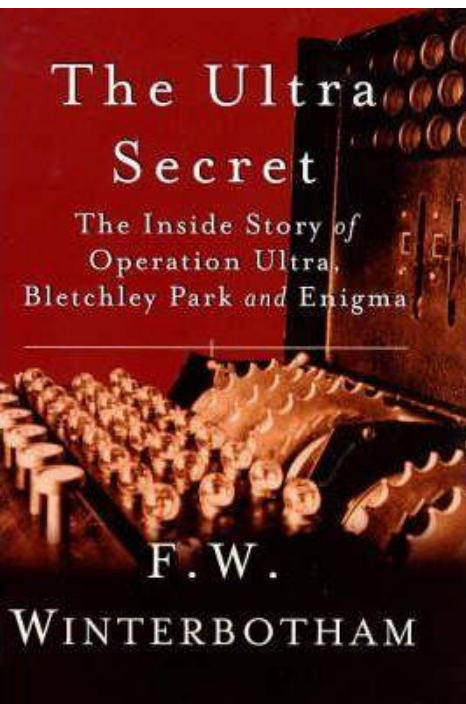
**Why.** A serious and historically important account of SIGINT and its contribution to military operations. Like a number of other publications it reinforces themes regarding dissemination, protection of the source, interpretation of the information and its influence on a campaign's objectives.

**Note:** Recommend the reading of 'Ultra Goes to War' first.

## THE ULTRA SECRET: THE INSIDE STORY OF OPERATION ULTRA, BLETCHLEY PARK AND ENIGMA (1999)

Frederick W. Winterbotham

ISBN-13: 978-0297644057



**The Author.** Winterbotham fought in the Great War in the trenches and as a pilot. He later joined MI6 and was tasked with collecting intelligence on German rearmament. A senior member of MI6, he was given the responsibility to create the system by which ULTRA was disseminated to theatre commanders

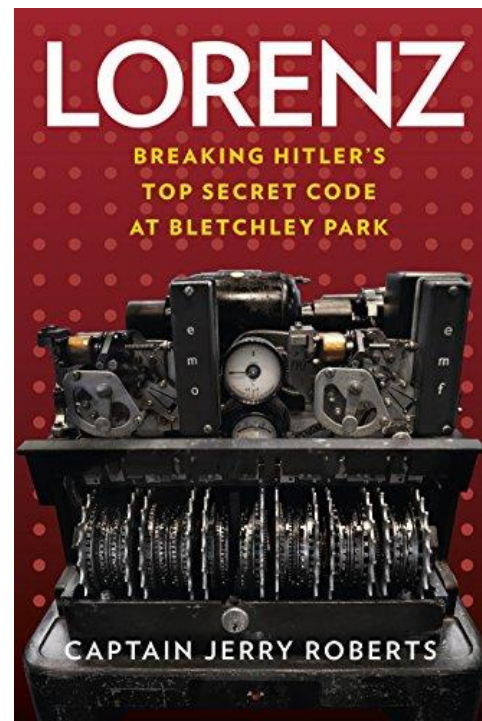
**The Book.** One of the first books to reveal the Enigma secret (originally published in the 1970s), it exposed the extent to which the intelligence was disseminated and its subsequent influence on the war effort. It gives a clear understanding of how extremely sensitive information can be delivered to those with a genuine 'need to know' while limiting the potential of compromise by the creation of Special Liaison Units (SLU); an outstanding result by Winterbotham. His concept of operations was fully accepted by the Americans and he was directly involved in the establishment of their SLUs.

**Why.** Shows the importance of having a system supported at all levels. If any of his SLU officers (relatively junior in rank) encountered intimidation by those without a need-to-know or suspected the misuse of ULTRA, Winterbotham would travel to the offending HQ and intervene; his presence and authority being that of the Allied governments.

## LORENZ: BREAKING OF HITLER'S TOP SECRET CODE AT BLETCHLEY PARK (2017)

Jerry Roberts

ISBN-13: 978-0750978859



**The Author.** Captain Roberts served with the Intelligence Corps at Bletchley Park as a cryptanalyst. Since the 1990s, until his death, he campaigned tirelessly to ensure that his former comrades were given the recognition they deserved for their secret work; for which he was awarded an M.B.E.

**The Book.** Published after his death, the book does sometimes lose its flow and can appear a bit disjointed and repetitive. However, it tells the story of the breaking of the Germans' most sensitive cypher, 'Lorenz', that was used by Hitler and his theatre commanders; as such it was the breaking of this code that was credited with shortening the war by at least two years (the breaking of Enigma stopped the British from losing the war). Lorenz was initially broken by hand, but its intelligence value led to the creation of the world's first electronic programmable computer, 'Colossus'.

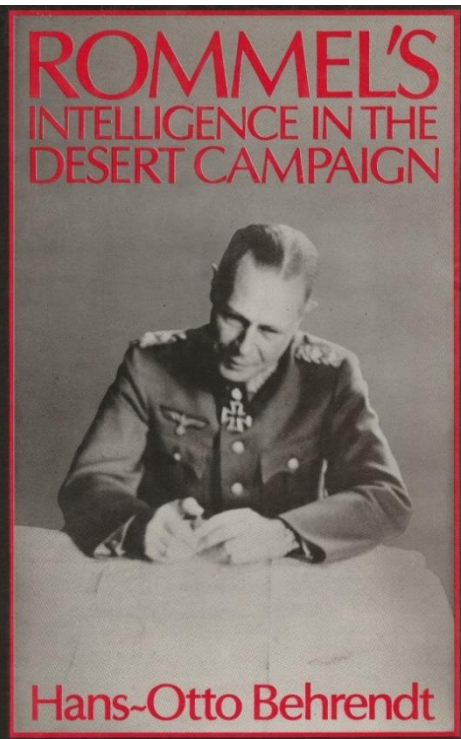
**Why.** To fully understand the story of the Allies' codebreaking efforts of WWII, the story of Lorenz, only made public in the 1990s (Enigma disclosed in the 1970s), must be understood. It shows that to fully exploit such intelligence, there is a need to combine the skills of intercept, cryptanalysis, languages, computing and mathematics, in this case by an exceptional intelligence manager; Major Ralph Tester.



## ROMMEL'S INTELLIGENCE IN THE DESERT CAMPAIGN (1985)

Hans-Otto Behrendt

ISBN-13: 978-0718305154



**The Author.** Behrendt was a senior intelligence officer on Rommel's Staff during the North Africa campaign.

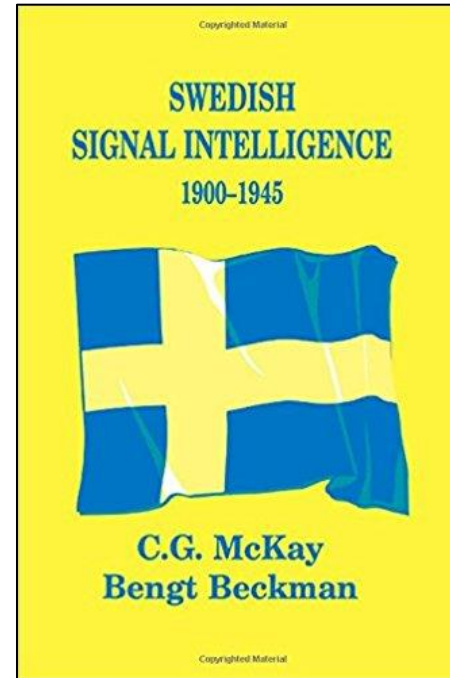
**The Book.** The book provides a detailed insight into how Rommel obtained and used intelligence during his campaigns. Traditional methods of reconnaissance troops and PW questioning were enhanced by the use of HUMINT, EW and aerial reconnaissance, with a particular emphasis on the latter two.

**Why.** Although not specifically about SIGINT, the book reveals the work of probably one of the most effective EW units of WWII, 621 Radio Intelligence Company, commanded by Captain Seeborn. Its importance to Rommel's was made apparent when the unit was overrun and captured by Australian forces during a surprise attack; its replacement never performed to the same standard. The book gives clear lessons on the planning considerations when pushing sensitive intelligence capabilities forward to enhance collection, at the risk of loss and/or compromise of that capability. In addition, 621 Company had access to strategic SIGINT capabilities, so its loss had significant implications to higher level intelligence feeds.

## SWEDISH SIGNAL INTELLIGENCE: 1900-1945 (2002)

C.G. McKay & Bengt Beckham

ISBN-13: 978-0714652115



**The Authors.** McKay is a specialist in intelligence history and has published a number of works on this subject. Beckham is a former senior member of the National Defence Radio Establishment (the Swedish equivalent of A.S.D.).

**The Book.** The book reveals Sweden's extremely successful SIGINT operation against the Germans and later the Russians, as it sought to safeguard its sovereignty during the war in Europe. It also discloses the close cooperation of German and Swedish SIGINT agencies during the Great War.

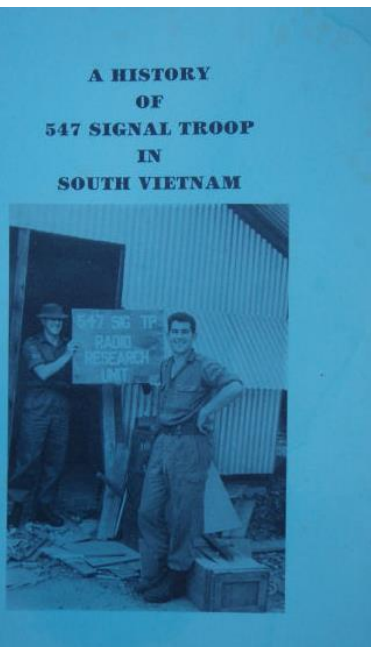
**Why.** It must be understood that advancements and innovations in SIGINT were not (and are still not) the sole property of the Allies (and the 'Five Eyes' community). In Sweden's case the perceived threat to its survival brought men such as Arne Beurling ('the Swedish Alan Turing') to the fore. He broke German cyphers by hand and went on to create encyphering machines that would be used the United States and its Allies during the Cold War. A reminder that all countries can pose a real and credible SIGINT threat when required.



## A HISTORY OF 547 SIGNAL TROOP IN SOUTH VIETNAM (2016)

Robert Hartley and Barry Hampstead

[http://pronto.au104.org/547Sigs/547Sigs\\_The-Story\\_Ver2/547-2\\_THE%20STORY%20OF%20547%20SIG%20TP\\_Rewrite\\_6%20Mar%2016.pdf](http://pronto.au104.org/547Sigs/547Sigs_The-Story_Ver2/547-2_THE%20STORY%20OF%20547%20SIG%20TP_Rewrite_6%20Mar%2016.pdf)



**The Authors.** Both men served with 547 Signal Troop on operations in Vietnam.

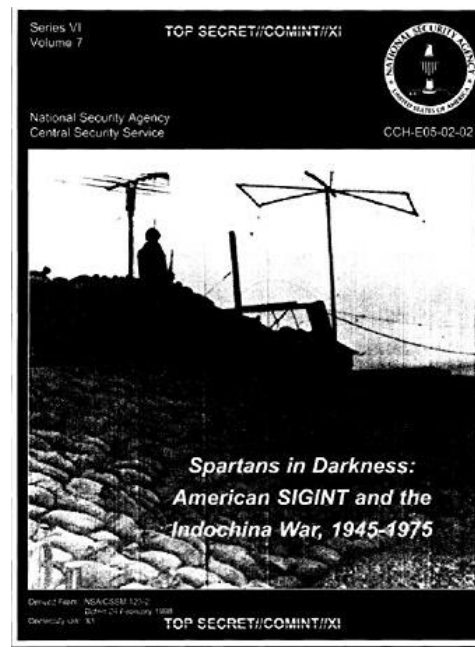
**The Book.** Not formally published, this publication is available free to download. It gives a detailed account of 547 Troop's deployment to Vietnam from start to finish. More recently, chapters relating to the troop's SIGINT operations have been declassified and released giving an unrivalled insight into Australian Army SIGINT operations during this conflict. A must read for anyone involved in Land-EW or tactical SIGINT.

**Why.** Provides a great example of how a unit can continually adapt, innovate and add value to a mission while on operations. The unit went from a SIGINT liaison function (feeding U.S. SIGINT to ADF commanders) to an independent tactical SIGINT collection capability, able to provide timely, accurate and relevant intelligence to the local commander; later expanded to local U.S. commanders. The unit pioneered airborne collection and DF operations, experimented with single-site HF DF technologies and developed an armoured-mounted intercept/forward LO capability. In addition, the ability to interpret and integrate specialised single-source intelligence is discussed; in relation to events surrounding the Battle of Long Tan.

## SPARTANS IN THE DARKNESS: AMERICAN SIGINT AND THE INDOCHINA WAR, 1945-1975 (2002)

Robert J. Hanyok

<https://fas.org/irp/nsa/spartans/spartans.pdf>



**The Author.** Hanyok is a former U.S. Department of Defense intelligence analyst and historian who has published a number of articles and books relating to U.S. SIGINT operations.

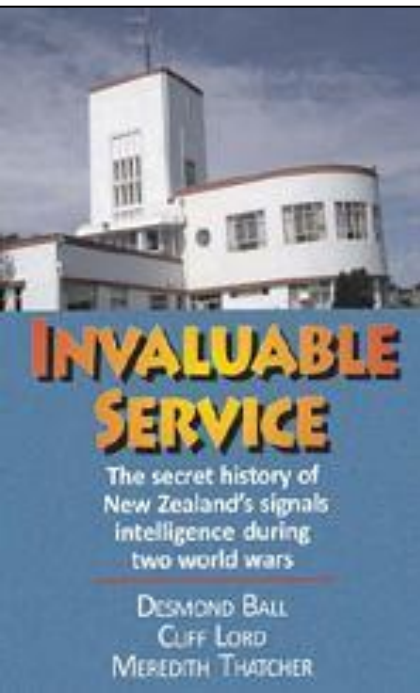
**The Book.** As the title suggests, this is a detailed declassified account of N.S.A. operations in Indochina. In some chapters, large sections have been redacted, but the requirement for this is regularly reviewed, so always access the latest on-line version. Of most interest, is U.S. SIGINT during the Vietnam War and its efforts to support operational and tactical commanders; while also assisting with the development of the South Vietnamese SIGINT capability.

**Why.** Within this large publication one can extract key lessons on the vulnerabilities of a national SIGINT organisation trying to provide timely and relevant intelligence to the war-fighter; a failing that allowed units such as 547 Troop to flourish. Not only were there delays in processing collect, the ability to collect far outstripped the capacity to analyse and hence vast quantities of intercept were never even processed. There are also examples of why any SIGINT/EW effort must be able to produce intelligence that is relevant and timely, if it is to add value to operations; something a national/strategic approach often fails at.

## INVALUABLE SERVICE: THE SECRET HISTORY OF NEW ZEALAND'S SIGNALS INTELLIGENCE DURING TWO WORLD WARS (XXXX)

Desmond Ball, Cliff Lord and Meredith Thatcher

ISBN-13: 978-1877431234



**The Authors.** Ball is a professor in Strategic and Defence Studies and has written and edited over 40 books on technical intelligence subjects. Lord, a former member of the Royal Signals, has co-authored a number of books relating to the histories of the British, Australian and NZ armies; he is the Honorary Historian of the Royal NZ Corps of Signals. Thatcher is a former Publications Manager of the Strategic Defence Studies Centre Publication Program.

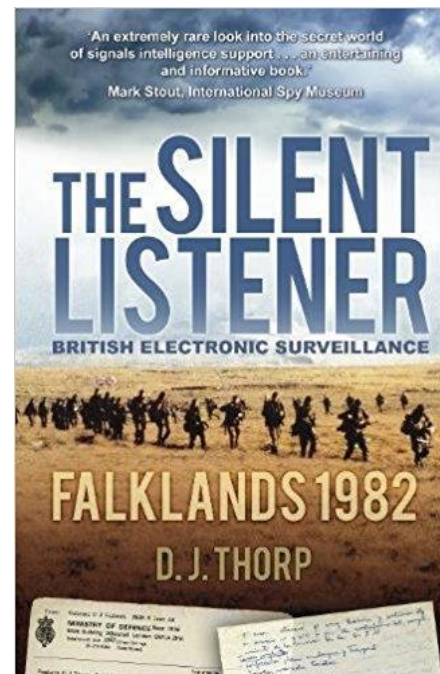
**The Book.** Gives an account of the history of SIGINT conducted in NZ and overseas. It covers all three services of the armed forces, in addition to civilian developments. An extremely interesting publication, it unlocks an almost lost aspect of NZ military history relating to SIGINT and EW that had its origins in the Great War.

**Why.** It reveals that Australian communicators (alongside NZ operators) conducted SIGINT collection during the Mesopotamia campaign in the Great War; a SIGINT effort that has been compared in significance to that of the Battle of the Atlantic in WWII. The creation of the NZ Army's WWII SIGINT capability is a great example of what one man can do when enabled by his chain of command; Sergeant MacKenzie, recruited, trained and later commanded this small but outstanding unit.

## THE SILENT LISTENER: BRITISH ELECTRONIC SURVEILLANCE, FALKLANDS 1982 (2015)

D.J. Thorp

ISBN-13: 978-0752460291



**The Author.** Thorp was a former intercept operator who later commissioned into the British Intelligence Corps and in 1982, he was selected to command a small SIGINT detachment that was to provide direct support to British forces operating in the South Atlantic.

**The Book.** The book is used by Thorp to tell the story of his military career and this consumes the first few chapters. In addition, the book was reviewed by the British Ministry of Defence on a number of occasions before publication was authorised and has suffered somewhat as a result. Bearing in mind that Thorp is not a writer by profession, it will not be the best book that one will read, but it is a rare account of the use of tactical SIGINT in a modern operating environment.

**Why.** Within the text can be extracted lessons and observations about deploying a sensitive SIGINT capability in direct support of operational and tactical commanders; something the UK was not fully prepared for (it had an established Land-EW capability to support armoured divisions in Germany, but not a light capability for out of area operations). It should make the reader consider a number of issues before any deployment; receipt of new equipment in the field, destruction of classified material, dissemination of vital tactical intelligence to the war-fighter, protecting the capability and changes in operational profile.