

BACKGROUND READING AND

TEACHER SUPPORT & PREPARATION



North Hill in World War II

Minehead, Somerset

SCHOOLS RESOURCE PACK

for Key Stages 2 & 3

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BACKGROUND READING

SECTION 1 – NORTH HILL BEFORE AND DURING WORLD WAR 2

WORLD WAR 2, 1939 -45

On September 1st 1939 Nazi Germany invaded Poland, two days later the British Prime Minister, Neville Chamberlain, declared war on Germany. Britain joined with France and Poland, followed by the countries of the British Empire and Commonwealth. This group came to be known as 'the Allies'. In 1941 they were joined by America and Canada, whose armies came to Minehead to train. Britain was badly-equipped for war and there was an urgent need for military training. Existing facilities were outdated and land for tank training was in short supply. North Hill became one of five major new tank training grounds in the country.

NORTH HILL AS A MILITARY SITE

During the Iron Age (700 BC – 43 AD), and the reigns of Henry VIII and Elizabeth I North Hill was considered an important military site. A beacon was set up above Selworthy in 1555, and in the late 1800s a large military training camp was established. The area continued as a training ground right up to the First World War. Soldiers were brought in on the Great Western Railway and over the channel from Wales. Between the wars, 1918 to 1939, the moorland was used occasionally by the 5th Somerset Light Infantry, a volunteer territorial force, which soon become a major fighting unit.

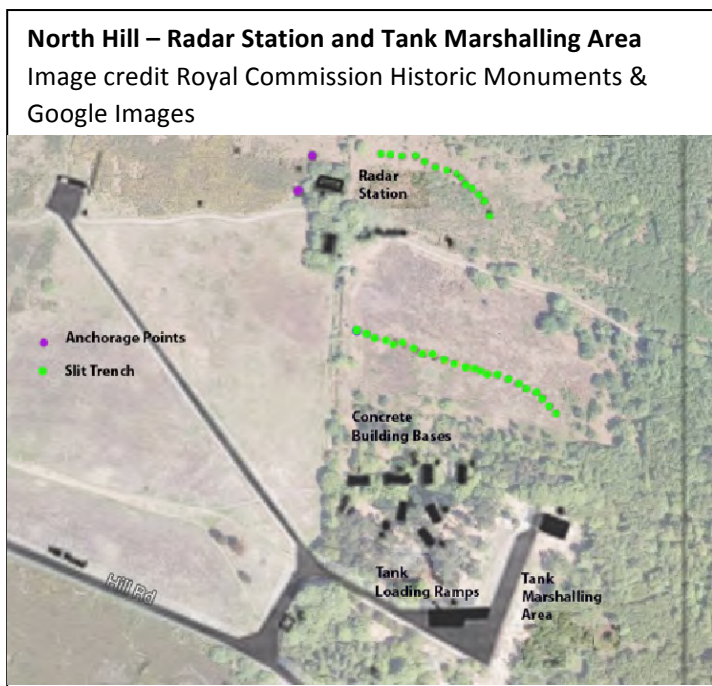
Using your knowledge of North Hill and your skills in map reading, can you say why North Hill was an ideal location for a military base?



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NORTH HILL EXPERIENCED A BIG CHANGE IN 1942.

North Hill was taken under military control with no access for civilians, and became Minehead Armoured Fighting Vehicle Range. Farms at East and West Myne were evacuated. In 1942 there was a lot of construction; temporary dugouts were created and later turned into more permanent buildings. Underground storage rooms were also added, possibly for tank ammunition storage or air raid shelters. A large concrete tank marshalling area was constructed with buildings and loading ramps in the Moor Wood area. It is thought the four building remains close-by belonged to Nissen huts, providing accommodation for soldiers. Twenty one slit trenches appear in this area, (dots on the map opposite), each around 2 metres long and 1 metre wide. Their purpose is unclear, maybe they were used to defend the nearby radar station, or had some role on the firing range. In early World War 2 infantry forces dug slit trenches to shield themselves from gun fire on the battlefield.



Concrete roads lead westwards to the tank firing ranges. You can follow the road to the firing ranges: three large triangles that the tanks drove around and some light railways that supported moving targets. Archaeologists also found sandbags used as observation posts to the seaward side. Although ruins can be seen, no buildings remained by 1950.



Turntable at the end of one of the light railways. This is the only bit of railway still visible.

Photograph by Rob Wilson-North

WHO WAS HERE?

The military trained 9 units at Minehead in 1938. By 1943 this had increased to over 100. Canadian troops who had helped with construction were the first to use it, bringing 20 tanks with them. We know that some British troops such as the North Irish Horse, a mixture of infantry and tanks, trained here for 2-3 weeks in autumn 1942. By the end of 1943 it was heavily used by American forces who were training for the forthcoming invasion of Europe (D-day).

American Troops training. Photograph credit Henry Buckton & Tim Hollinger



HOW DID LOCAL RESIDENTS REACT?

Tanks arrived at Minehead Station and were driven along the seafront towards North Hill. Local residents Peter Batchelor and Dudley Parsons said that Churchill tanks' *caterpillar tracks tore up the roads and damaged iron railings, and the sound of the firing was like living in a war zone.* But this soon became part of everyday life.

HOW DID MINEHEAD FARE AS A TANK TRAINING GROUND?

Compared to other grounds such as Castlemartin and Kirkcudbright, Minehead had limited space and troop battle training was restricted, (a troop was composed of 3 to 4 tanks). Minehead did not offer all the space and facilities needed for a maximum firing range and it only had 3 firing areas with a very limited arc area to fire into. However, Minehead's contribution was very important. Since the range was based in Southern England many troops came here to be trained. In the second half of 1944 40 American armoured units were trained at Minehead; more than at any other range.

THE END OF MINEHEAD AS A TANK TRAINING GROUND

When the allied armies left for Europe there was no need for more tank training. Minehead was closed on 9th November, 1944. Machinery was dismantled and the land returned to civilian use. In the 1950s, during the Cold War, all the military structures were removed. North Hill was declared safe for public use, even though unexploded shells were still found in the 1970s.

HOW DO WE KNOW ALL THIS?

In World War 2 all army units were required to keep a record of their operations, known as 'the war diary'. During the war they were sent to the War Office, and have now been transferred to The National Archives at Kew. Other researchers have studied them in great depth, and written about military activity on Exmoor. They, and Internet links, are listed under 'Sources'.

BACKGROUND READING – SECTION 2 - TANKS IN WORLD WAR 2

In World War I (1914-18) it became clear that heavy machinery, rather than horsepower, was needed to break through barbed wire, enemy trenches and machine gun fire. Early WW I tanks proved unreliable, however, between the two wars developments in the automobile industry enabled some countries to develop tanks. WW 2 became known as 'the war of mechanisation'. Britain, France, Germany, Italy, Czechoslovakia, Japan, the Soviet Union and America were developing different manufacturing and engineering techniques, and different types of tank emerged.

TANK TIMELINE

The first tank to enter combat was the Mark I in 1916, developed by the British Army. It was called 'tank' to maintain secrecy about its primary function; to support foot-borne infantry. The tank was designed to cut across battlefields over trenches, resist small arms fire, and capture enemy positions. It suffered many mechanical failures. By 1918 the Mark V was born, a vastly improved tank.



Mark VIII tank in World War I. It was 10m long, weighed 37 tonnes and travelled at 11 km/h

Photo source: https://en.wikipedia.org/wiki/Tank_Mark_VIII

In the 1930s Hitler re-armed Germany. The Allies saw that heavy machines with bigger guns would be needed to combat the terrifying Nazi Panzer, which was supported by artillery, infantry, engineers, motorbikes and air power. Throughout World War 2 all countries tried to outdo each other by developing better armoured vehicles with improved weaponry, and tanks that could be mass produced.

World-wide Rivalry in Manufacturing Techniques...

America and the USSR used very large, metal casting to form turrets and entire tank hulls

Germany - Welding armoured plate together instead of riveting and bolting. Used 'Zimmerit'; a non-magnetic coating that combated magnetic anti-tank mines.

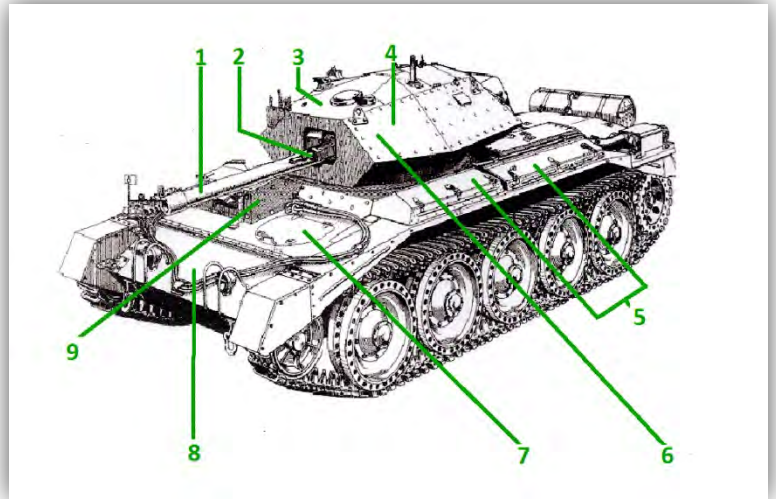
Hungary, Japan, Italy, UK – Continued to use riveting and bolting. **Rivets** can shear off when struck, resulting in crew casualties.

America and USSR - Simplified tank designs for fast production, eliminating unnecessary components and some steps in manufacturing. Contrasting with other nations, the US was safe from air attacks on its factories.

France and Germany – Kept some features that were expensive, or made manufacturing complex

CRUSADER MARK III – CRUISER

- 1 Gun – 6 Pounder
- 2 Machine gun
- 3 Commander / loader inside turret
- 4 Turret – rotates 360 degrees
- 5 Storage bins (2 on each side)
- 6 Gunner/ wireless operator inside turret
- 7 Previous machine gun deleted and covered
- 8 Glacis plate
- 9 Driver's position inside cupola



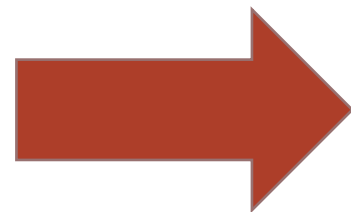
According to Lieutenant Colonel Gareth Davies, tank design is based on 3 factors:

Protection, Mobility, and Firepower.

There were 3 types of tank:

- **Light Tanks** – light and stealthy, not very well armoured. Used for reconnaissance. 3 crewmen (commander, gunner, driver)
- **Cruiser Tanks** – Fast, operated independently of infantry, attacking the enemy's soft targets such as headquarters, 4-5 crewmen, plus wireless operator and hull machine gunner)
- **Infantry Tanks** - Very well armoured, moved slowly with foot-borne infantry, 4-5 crew.

**CHECK OUT THE TOP TRUMP TANK CARDS AND
FIND OUT YOUR MISSION**



BACKGROUND READING - SECTION 3 - TANK TRAINING IN WORLD WAR 2

Monday, 10 September, 1943 may have been "just another day" but for a lot of guys, it was their first day of a long journey that, one way or another, would change their lives forever. It was their first day as members of the 81st Tank Battalion.

[History of the American 81st Tank Battalion, who trained at Minehead](#)

In 1939 five new large-scale ranges were established in Britain. When the Americans and Canadians joined the war they were trained in Southern Britain and British tank units went to Northern England. It was very hard for the Allied troops to keep up with developments on the battlefield; new German tanks were emerging all the time with better firepower, more protection, and improved manoeuvrability, and crews had to be trained very fast.

North Hill became known as Minehead Armoured Fighting Vehicle Range (AFV). It was the smallest of the five ranges but the most used.

TRAINING TO BE IN THE TANK CREW

Training started with a 6 week initial period where you would become a soldier from a civilian. This would determine your suitability as a tank crew member. After a week's leave, you might be chosen to be in the tank crew. Gunners would have a further 7 weeks' training, drivers 9 weeks', and wireless operators 15 weeks' training. Some war records suggest a 2-3 week training period for gunners. This may have been due to the high demand for troops in Europe.

WHAT WAS DRIVING A WORLD WAR 2 TANK LIKE?

Here is an account from soldier [Cecil Newton](#), driving a Valentine Tank:

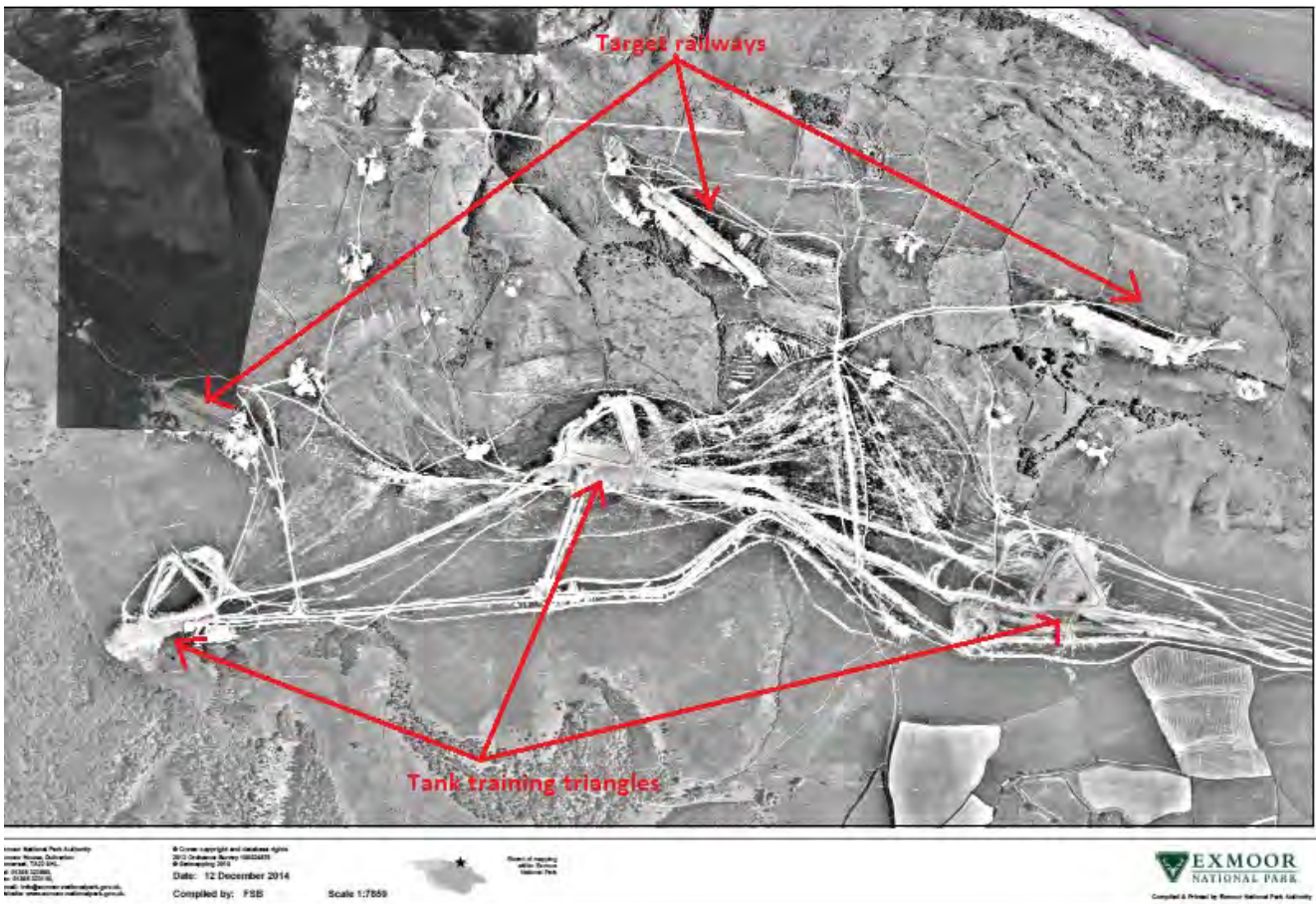
The driver had to get in sideways via the hatch situated on a slope each side of the cab. I found it impossible to push the steering levers forward over a cam that would neutralise the brakes; pulling a lever back braked one track. The only way I could do it was by leaning back and putting my foot on the lever with the result that the tank tended to wander about.

The 'Churchill' was different and easy to drive. The steering column was similar to a bicycle handlebar and the driver changed gear by looking at the rev counter. The engine noise could not be identified because of the clatter from the tracks when the tank was on the move. ...Before setting out for the moon-like terrain of the training grounds the instructor warned me that the battery was flat and not to stall the tank which I did, in a deep flooded depression. The instructor had to walk a considerable distance to get help and only expressed his discontent with "Stupid boy".

FIRING TRAINING AT MINEHEAD AFV RANGE

According to records, at the height of the war, AFV ranges had 2 units of men firing on them, and the firing training at Minehead took around 2-3 weeks. In November 1943 the strength of one regiment was 37 officers and 655 soldiers.

Minehead had 3 ranges for shooting different guns to a distance of 1100 metres. Tank crews would service, re-fuel, and load ammunition onto the tanks on the large concrete platforms in Moor Wood. Then they drove a few kilometres to the other end of North Hill to the gun emplacements for firing practice. They drove around one of the triangles and shot at a moving target, often a dummy tank such as the one below, which ran along a light railway. They fired in the direction of the sea. The area behind the target is known as 'the danger area' and is forbidden territory to pedestrians and boats.



Aerial photograph showing triangles that the tanks drove around, and the light railway lines. The sea is in the top right corner. Photograph source Exmoor National Park



A cardboard dummy tank which ran along a light railway track. Photograph courtesy of Justin Blundell



Cruiser tank turret found on North Hill in 1998. Photograph by Rob Wilson-North

WHAT WAS LIFE LIKE ON NORTH HILL?

Soldiers worked hard during the day. According to the diary of American 81st battalion, they were generally free in the evenings “to enjoy the pleasures Minehead had to offer”. Some were housed in the town, as well as in a small hutted camp on the range.

Cecil Newton’s diary when he was training at Hevingham Camp:

The rather ancient huts were in a wood with service roads and hard standings next to the huts for the tanks. There were two steps down into the hut which had stone flag floors and a ‘Turtle’ cast iron stove in the centre. Each side of the hut were wooden bunks with straw palliasses the shape of a body and pillows which were also stuffed with straw; the thicker bits tended to stick into your ear. The stove had to be put out at night so it was allowed to die down making the hut cold in the winter. If it was still active then it was usual to have a communal pee-in to put it out.

Punishment, known as ‘jankers’, for a misdemeanour was carefully designed to make life as uncomfortable as possible for the recipient. At the end of the day’s duty the culprit reported to the guard house in ‘Best Battle Dress’, smartly turned out with webbing freshly blanched. The next stage, later in the evening was attending a parade with small pack and then before lights out in ‘Full Marching Order’. In between it he had to parade in overalls and polish buckets so they resembled silver and scrape the guard room floor. Changing from one type of parade order to another could result in scuffing the blanched webbing and this resulted in extra days of ‘jankers’.



Photograph used by kind permission of Dave Lloyd and Ron Blundell. For more information on Dave Lloyd's life as a young man in Minehead before and during WWII please follow this link <http://ronblundell.co.uk/pgtres/davelloyd.htm>

I laugh when I think of the time self and pals were watching a film at the Regal, when the lights came on and Sammy Jay (the manager) made an announcement that all Canadian troops in the audience had to immediately report back to Headquarters. It turned out later that another convoy of Tanks had arrived by low loader on rail at Minehead station, but that the Tank driver of one was sitting with a girlfriend in the audience, and had paid a buddy to drive it off the rail wagon to a transporter, but not being trained, he had driven in off the wagon onto the lines on its side!!"

Dave Lloyd, Source www.minehead-online.co.uk/camp.htm

BACKGROUND READING SECTION 4 – RADAR DEVELOPMENT

In 1915 Robert Watson-Watt started as a meteorologist at the Royal Aircraft Factory at Farnborough with the aim of applying his knowledge of radio to locate thunderstorms so as to provide warnings to airmen. He was then approached by the Air Ministry to research the idea of Death Rays – which he felt uncomfortable about taking on, instead he presented a research proposal on 'The Detection of Aircraft by Radio Methods'. Which led to the development of



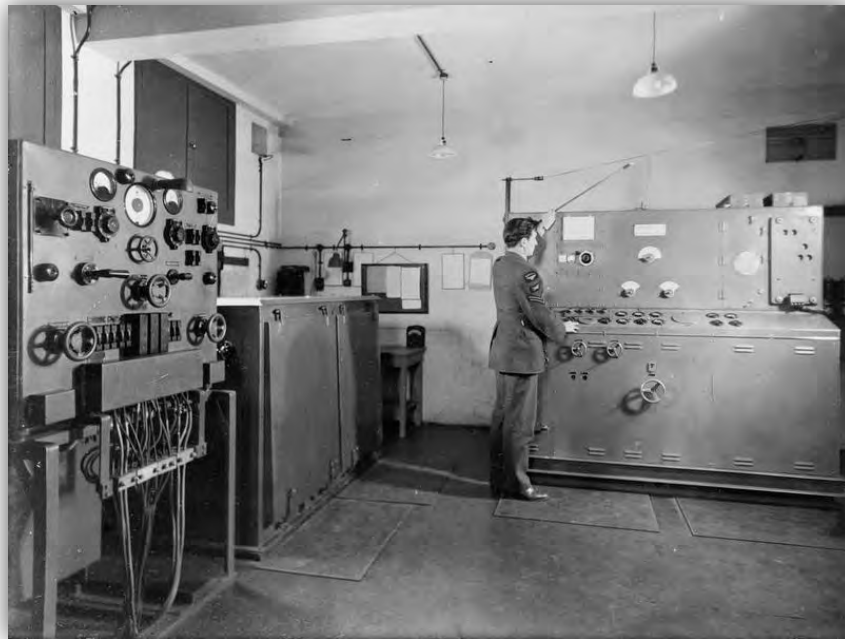
"I think we can say that the Battle of Britain might never have been won... if it were not for the radar chain"

Sir William Sholto Douglas- Marshal of the Royal Air Force

what we now know as RADAR.

Sir Robert Watson Watt Copyright IWM (CH 13862)

The acronym RADAR (for Radio Detection And Ranging) was coined by the U.S. Navy in 1940, and the subsequent name "radar" was soon widely used. A whole chain of new Radar Stations were set up with the Fighter Controllers housed in a concrete Operations Room, known to all as the "Happidrome" named after a popular BBC radio series of the era.



Chain Home Low: interior of the transmitter room at an AMES Type 2 CH Low station. Copyright IWM (CH15184)

Watson Watt and his team developed the new radar system which enabled the RAF to be more accurate and efficient about how they deployed their forces.

Early in WORLD WAR 2 Hitler re-directed his tactics and started focusing his attention on destroying Britain's cities and Industrial centres. In addition, the Luftwaffe switched to night raids to try and reduce their losses to the defending RAF fighters.

This was significant as the Chain Home Radars were not hugely accurate to identify enemies in the darkness. Two new Radar systems were developed; the ground-based Ground Control Interception Radars and, of course, the new and top secret Airborne Interception Radars fitted to the Beaufighter and Mosquito aircraft.

Together, these two revolutionary Radar systems first enabled Ground Controllers to guide the fighters into a position whereby they could pick up the intruding aircraft on their own Radars. From that point, the pilot and his Radar operator would close in to identify the aircraft ahead, and, if it was a "Hostile", to shoot it down.

Radar at North Hill

What was the RADAR Station used for?

From February 1942 the RADAR Station was up and running. It housed radar equipment that was used to detect aircraft flying at low altitudes (below 500ft), and ships. The antenna was mounted on tall masts and linked to the station by cables at Minehead. This type of facility was known as a Chain Home Low (CHL) Station. The building was made of concrete and inside were three rooms, a hole in the roof connected the internal equipment to an external antenna (mounted on a gantry), which rotated around 360 degrees looking for returns (the signals coming back from solid objects such as aircraft).

The RADAR station at Minehead was part of a chain, the first being operational from 1937. By 1944 there were 244 stations around the country, each was connected to a filter station where data was plotted and processed and then communicated onto pilots and bases.



The Radar Station at North Hill, Minehead

Photograph by Caroline Barnes

The RADAR stations and the information they were able to gather and communicate was crucial to the war effort but the technology was short lived and by 1947 there were only 36 stations remaining, today there are only 23.

The RADAR Station at Minehead is in great condition, and originally it would have been part of a bigger cluster of buildings: an operations block, a power block and standby block, administrative buildings and defensive slit trenches, which may have been used by the adjacent tank training ground. By 1946 the site was no longer operational, the transmitter structure on top of the operations block having been dismantled. Most of the additional buildings had been destroyed by 1950.

Aerial photographs were taken in 1946 and 1947, the photos appear to show the station being disguised, possibly by manipulating the image.

A uniform approach to building

It is a standard design for a CHL operations block, being 12 metres long (E-W) by 5 metres wide (N-S). A pair of buttresses are sited on the N and on the S walls. The S facing side of the building seems to have been cut into the hillside. When operational, the building would have a 3 metre high metal gantry which would have supported the RADAR array.



Photographs by Caroline Barnes

Who worked at the RADAR Station?

Women who joined the Royal Air Force were in the Women's Auxiliary Air Force (WAAF). They did the same as the Army's Auxiliary Territorial Service (ATS); tasks included cooking, clerical work, operating telephone exchanges, driving all types of vehicles and servicing aircraft, but opportunities for slightly more exciting work were also available. Many women worked in the new RADAR stations to track incoming enemy bomber formations. RADAR station sites were usually the first target for Stuka dive-bombers so a post in one of these radar stations could be very dangerous. However, the women in these units were the early warning ears and eyes of the RAF during the Battle of Britain. For all of this, women were not allowed to train to be pilots of war planes.

We were not to have reached the age of caution, as instinctive action was needed for the work. There could be no hesitation. We had previously taken an initial psychological test, based on the one given to Fighter pilots, to gauge our response time. Contributor: Gwen Reading nee Arnold Chain Home Radar operator at Bawdsey 1943-1945

The stations were manned 24 hours a day and an operator would work an 8 hour shift. Although a highly pressured job at times the RADAR operators might have had long periods of little activity. The operators would be communicating information to plotters at the filtering stations, which were built underground.

The hours spent underground in uncomfortable conditions could get very boring. Many plotters would occupy themselves 'binding'. This was the name given to the chatting, which took place between a plotter and the RADAR operator at the other end of the line. They would probably never meet but many friendships were formed over the air on such occasions, especially if they had been on duty together when there had been heavy air activity. This relationship between RADAR operator and plotter was of great importance since it was vital to have complete co-operation in order to pass on the relayed information as correctly and swiftly as possible.



Photograph Source: Gwen Arnold

SOURCES, VISUALS AND LINKS

INTRODUCTION

Ordnance Survey map Minehead area

Site Map North Hill - RCHM

SECTION 1 - NORTH HILL before and during the War:

RAC Progress Report No.6 War Office 165/132, The National Archives, Kew

RAC Progress Report No.9 War Office 165/135, The National Archives, Kew

The History of R.A.C Ranges during the period 1939 -1945, held by the R.A.C Gunnery School. E1974.77.2

Smith, Steven - draft research into military activities on Exmoor during the Second World War. Research carried out at The National Archives, Kew (TNA). Commissioned by Exmoor National Park.

<http://www.exmoorher.co.uk/war-on-the-moor-military-training-on-exmoor>

ADDITIONAL READING - <https://docalexander.wordpress.com/?s=minehead> - Between 1942 and 1943, Doc. Alexander made several visits to the tank ranges on North Hill with the 14th Canadian Army Tank Regiment (The Calgary Regiment)

<http://www.minehead-online.co.uk/tank.htm> - Daphne McCutcheon

http://www.pastscape.org.uk/hob.aspx?hob_id=1102188&sort=4&search=all&criteria=Chain%20home%20radar&rational=q&recordsperpage=60

Picture: American Troops training- *'Somerset at War'* (book) - Henry Buckton/Tim Hollinger

Picture and quotation from David Lloyd - <http://www.minehead-online.co.uk/camp.htm>

SECTION 2 – TANKS IN WORLD WAR 2

Picture Mark VIII

[http://commons.wikimedia.org/wiki/File:Allied_Mark_VIII_\(Liberty\)_Tank.jpg#/media/File:Allied_Mark_VII_I_\(Liberty\)_Tank.jpg](http://commons.wikimedia.org/wiki/File:Allied_Mark_VIII_(Liberty)_Tank.jpg#/media/File:Allied_Mark_VII_I_(Liberty)_Tank.jpg)

http://en.wikipedia.org/wiki/Tanks_of_the_interwar_period

http://en.wikipedia.org/wiki/British_heavy_tanks_of_World_War_I

Miller, David – An Illustrated Guide to World War II Tanks and Fighting Vehicles, 1981

Lt Colonel Gareth Davies – Interview, March 2015

Tank diagram - Crusader Mark III - Miller, David

SECTION 3 – TANK TRAINING IN WORLD WAR 2

History of the 81st Tank Battalion - <http://www.5ad.org/units/81st.html> Book: VooDoo, pub. 81st Tank Battalion. *Copyright 1947. Charles P. DeBevoise*

<http://www.exmoorher.co.uk/>

<http://www.minehead-online.co.uk/tank.htm> - Daphne McCutcheon

The History of R.A.C Ranges during the period 1939 -1945, held by the R.A.C Gunnery School. E1974.77.2

Cecil Newton - Personal story WORLD WAR 2 soldier –

<http://www.bbc.co.uk/history/ww2peopleswar/stories/31/a1960931.shtml> 'Cecil Newton, WW2 People's

War' - 'WW2 People's War is an online archive of wartime memories contributed by members of the public and gathered by the BBC. The archive can be found at bbc.co.uk/ww2peopleswar'

Aerial Photograph of Minehead Firing Range - taken by Royal Air Force between 1946-48., supplied by Exmoor National Park

TOP TRUMP CARDS

Crusader -

Miller, David – An Illustrated Guide to World War II Tanks and Fighting Vehicles, 1981
CRUSADER MARK III - http://commons.wikimedia.org/wiki/File%3ACrusader_tank_III.jpg
http://www.tanks-encyclopedia.com/ww2/gb/Cruiser-MkVI_Crusader.php

Stuart M3

Image - <http://commons.wikimedia.org/wiki/File%3AM3-Stuart-Fort-Knox-1.jpg>

Sherman

Image - "M4 Sherman tank - Flickr - Joost J. Bakker IJmuiden" by Joost J. Bakker - M4 Sherman tank.
Licensed under CC BY 2.0 via Wikimedia Commons -
http://commons.wikimedia.org/wiki/File:M4_Sherman_tank_-_Flickr_-_Joost_J._Bakker_IJmuiden.jpg#/media/File:M4_Sherman_tank_-_Flickr_-_Joost_J._Bakker_IJmuiden.jpg
Miller, David – An Illustrated Guide...

Churchill Infantry Tank

Image:http://upload.wikimedia.org/wikipedia/commons/4/42/Tanks_and_Afvs_of_the_British_Army_1939-45_KID1265.jpg

SECTION 4 RADAR further links

Links : <http://www.bbc.co.uk/history/ww2peopleswar/stories/98/a1993098.shtml>
<http://www.minehead-online.co.uk/camp.htm>
<http://www1.somerset.gov.uk/archives/>
<http://www.bbc.co.uk/history/topics/radar>
<https://www.youtube.com/watch?v=wFN4uE2b9hA>
http://www.telegraph.co.uk/history/Britain_at_War_Readers__Memorie/6507067/WW2-readers-memories-my-time-in-the-WAAF.html
http://www.historylearningsite.co.uk/chain_home.htm
http://www.historylearningsite.co.uk/robert_watson_watt.htm
<http://www.rafmuseum.org.uk/research/online-exhibitions/history-of-the-battle-of-britain/radar-the-battle-winner.aspx>
<http://media.iwm.org.uk/iwm/mediaLib/26/media-26574/large.jpg?action=d&cat=photographs>
Site Name: RAF West Myne ('ZEM') CHEL R11 ROTOR RADAR Station
North Hill off Hill Road Selworthy, Somerset OS Grid Ref: SS928486

TEACHER SUPPORT AND PREPARATION

1. GROUP TASK - TANK MISSIONS – “CHOOSE THE RIGHT TANK FOR THE JOB”

Age: For groups of 3 or 4 children Year 5 upwards, mixed groups of boys and girls

Skills: Group strategy and planning, comparing and contrasting, Geography / mapping, Maths / measurements, writing and presentation

Knowledge: WW2, Engineering basics (speed, distance, weight, protection)

Preparation: Print out the Top Trump cards on separate A5 sheets, for special effects get them laminated. If your class is unfamiliar with tanks you will need to explain the specifications on the Trump Cards.

Resources needed: Plain paper, pencils and rubbers, rulers (cm), coloured pencils, calculators as desired.

Task time: 30 minutes (if the groups do all 3 tasks), 10 minutes if they take one task per group.

Discussion: Discuss the choices made, and weigh up the advantages of one tank over another. The groups may choose more than one tank for a mission. *The answers to Mission 1 might be: 1) Infantry / cruiser tank – Crusader III - It has speed, comparatively good armour, mine clearance equipment, can be disguised, but it also suffers sand erosion and track breakup, or Sherman M4 – for similar reasons. Mission 2 – Infantry tank Churchill A22. Mission 3 – Light Tank Stuart.*

2. GROUP TASK – “DESIGN A WW2 TANK TRAINING GROUND”

Age: For groups of 3 or 4, Year 5 upwards, mixed groups of boys and girls

Skills: Geography / mapping, Maths / measurements, Art / drawing and cutting, teamwork

Knowledge: Engineering basics, key symbols, WW2

Task time: 30 -40 minutes

Presentation and discussion: 10-15 minutes. After the activity share the map on p20 with the class.

Resources: Graph Paper A3 one per group, ruler (cm), coloured paper – a selection, blue tack, coloured pencils, rubber, pencils, extra paper, calculators if desired.

3. INDIVIDUAL TASK – CAMOUFLAGE

Age: For groups of 3 or 4 Year 5 upwards, mixed groups of boys and girls

Skills: Design, painting, drawing, presentation

Knowledge: connecting natural and manmade materials, WW2, Terrain

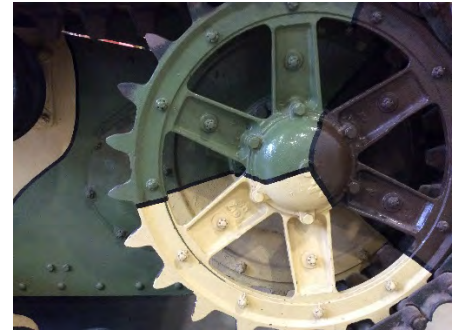
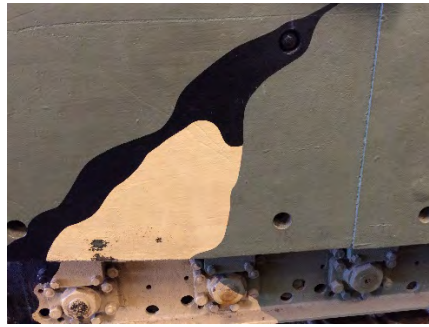
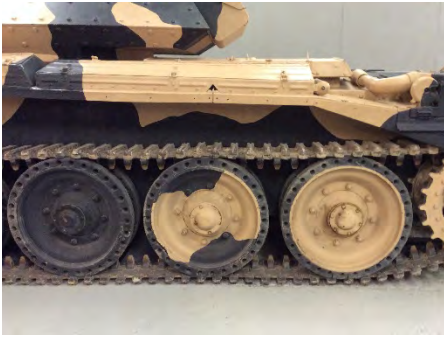
Task Time: 30-40mins

Presentation: Class exhibition alongside a world map of WW2 activity

Resources: A2 paper, paint

Additional Design ideas





4. INDIVIDUAL TASK – “A VERY HUSH-HUSH BUILDING”

Age: For individuals of 3 or 4 Year 5 upwards

Skills: Language and Literacy, history, interpreting evidence

Knowledge: WW2

Task time: 30 -40 minutes

Presentation and discussion: 10-15 minutes, individual reading, assembly presentation, display

Resources needed: Exercise books, pens

5. GROUP TASK - “RADAR DETECTION”

Age: For groups of 3 or 4 Year 5 upwards, mixed groups of boys and girls or as an individual task

Skills: Maths / measurements, Art / drawing teamwork, differentiation of design

Knowledge: Engineering basics, WW2

Task time: 30 -40 minutes

Presentation and discussion: 10-15 minutes. After the activity compare radar diagrams and assess the stealthiest design, compare paper aircraft design for aerodynamics by flight/distance experiments

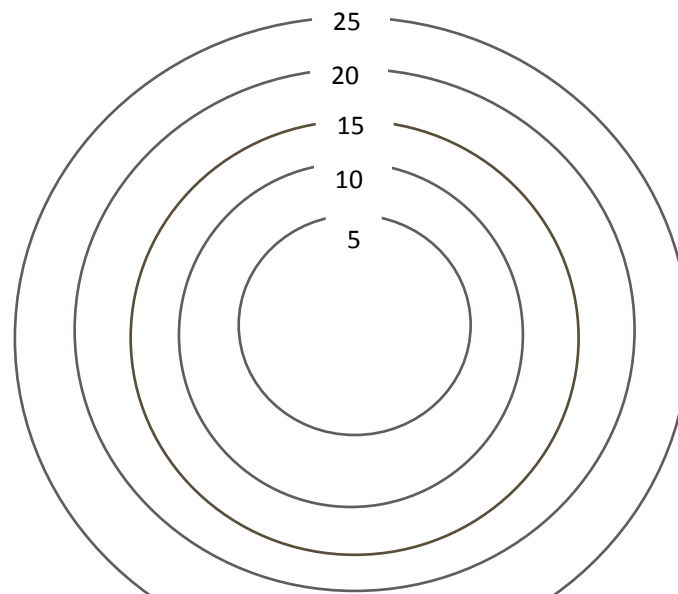
Resources needed: Photo copied templates of the Radar Diagram and Aircraft Identification sheet, sheets of A4 paper per group, ruler (cm), coloured pencils, pencils, extra paper, and tape measures if desired

Additional science link: http://www.sciencebuddies.org/science-fair-projects/project_ideas/Phys_p075.shtml#procedure

Additional Discussion areas

- How does radar work?
- In what ways can you reduce an aircraft's radar cross-section?
- Why are computer simulations important to the development of stealth technology?
- Why are flight computers an essential part of modern stealth aircraft?
- What are some of the differences between conventional aircraft and stealth aircraft?

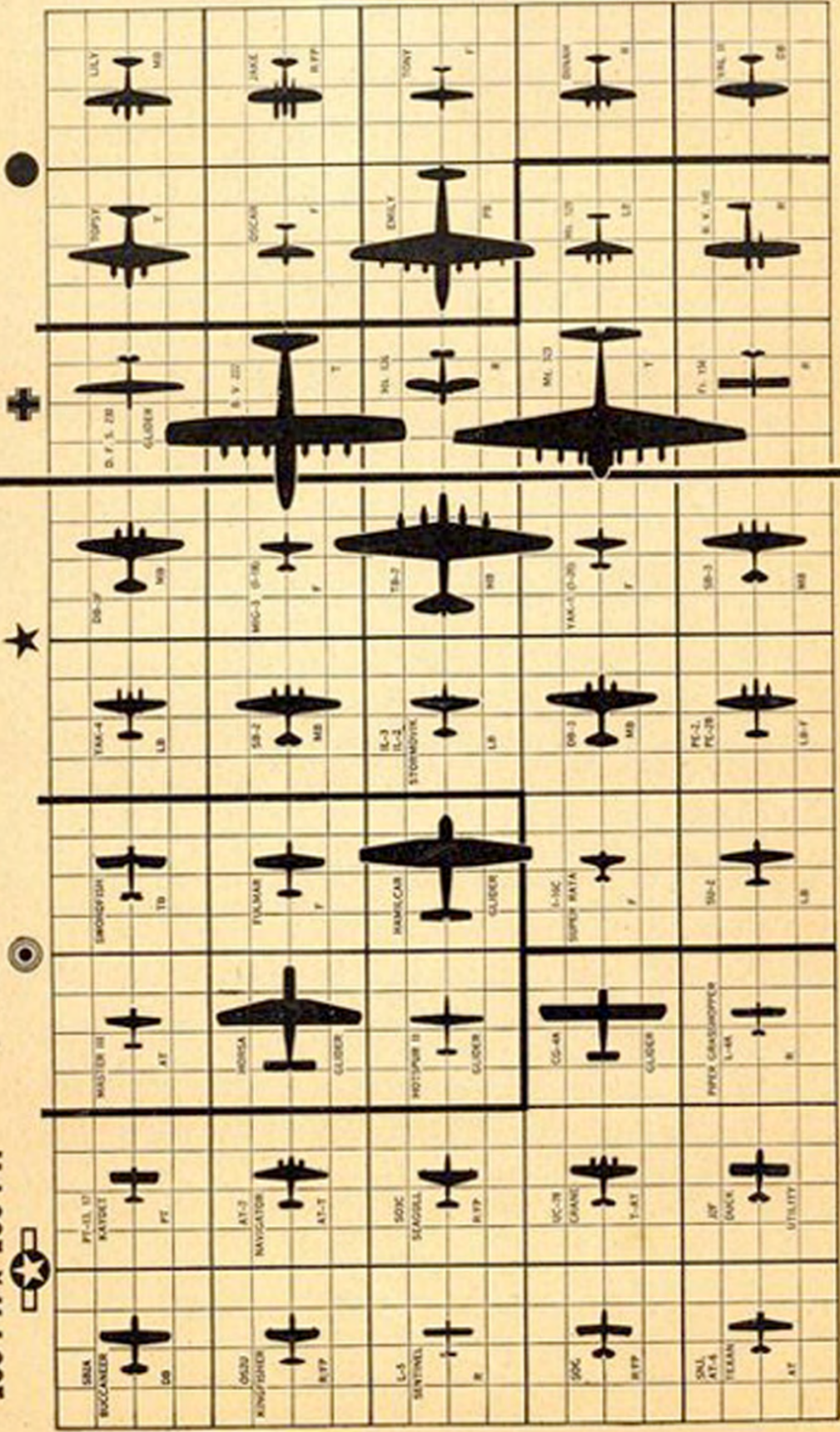
Radar Diagram Template

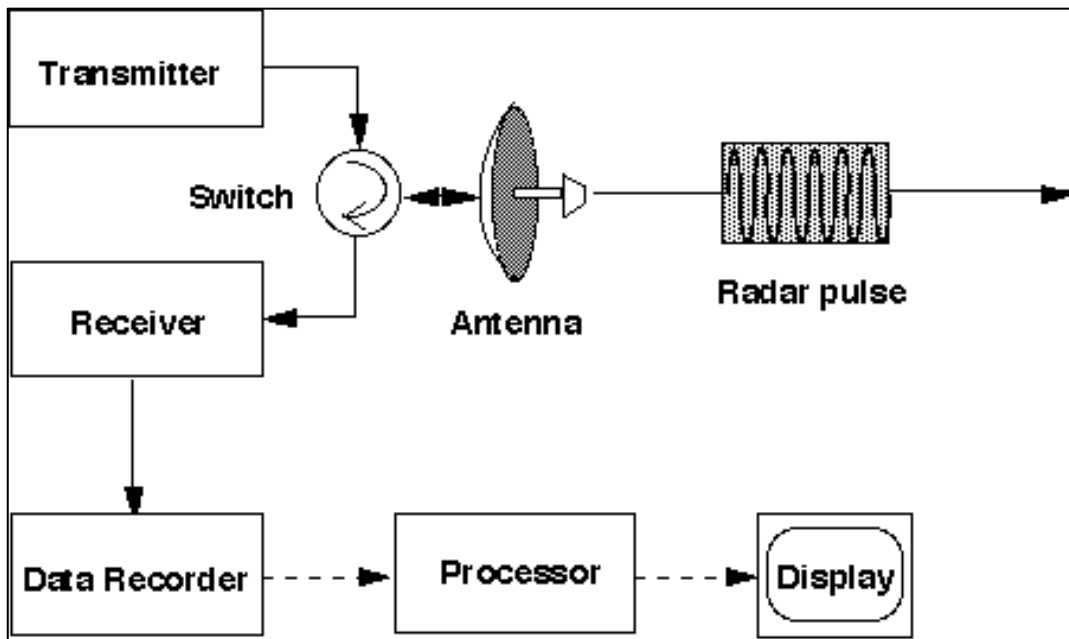


EACH LARGE SQUARE
100 FT. x 100 FT.

FRIEND

FOE





OSMAP SHEET BOVINGTON AND LULWORTH
OSMAP SHEET BOVINGTON AND LULWORTH
2 5000



LULWORTH RANGE NOTES

HEATH RANGE	1. Heath Range
Wool Heath	2. Wool Heath
BOVINGTON CAMP	3. Bovington Camp
Wool Heath	4. Wool Heath
Wool Heath	5. Wool Heath
Wool Heath	6. Wool Heath
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Wool Heath	30. Wool Heath

LULWORTH RANGE NOTES (continued)

Wool Heath	31. Wool Heath
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Wool Heath	50. Wool Heath

Scale 1:25,000

LEGEND

Training Area Boundary	Range Area	Light Transport Vehicle (LTV) Training Point	Light Transport Vehicle (LTV) Training Point
MOB Forward Boundary	Training Point	Tank Training Point	Tank Training Point
MED Forward Boundary	Training Point	Tank Driver Training Point (TDTP)	Tank Driver Training Point (TDTP)
Out of Mission Area	Training Point	Weapon Training Point	Weapon Training Point
Restricted Area	Training Point	Vehicle Training Point	Vehicle Training Point
Range Area Boundary	Training Point	Vehicle Training Point	Vehicle Training Point
Training Area Sub-Division Boundary	Training Point	Vehicle Training Point	Vehicle Training Point
Range Area Sub-Division Boundary	Training Point	Vehicle Training Point	Vehicle Training Point

CAUTION NOTE

This map is a reproduction of the original map and is not intended to be used as a substitute for the original map. It is provided for reference only and should not be used for any purpose other than that for which it was intended.