



## Joint Tactical Exercise Planning Staff

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### JOINT WARRIOR 161 SUBMARINE, MINEWARFARE, LIVE FIRING AND DENIAL OF GPS TRAINING ACTIVITY

1. Exercise JOINT WARRIOR 161 (JW161) will take place between 10 and 21 March 2016, delivered by the Joint Tactical Exercise Planning Staff (JTEPS) from Faslane. It is a programme of exercises conducted across the UK by land forces, warships, submarines and aircraft from 12 Nations. The majority of the exercise will be focussed in the airspace, offshore and coastal waters to the North and North West of Scotland. This booklet provides outline information on scheduled activity including details of intended gunnery and aircraft bombing activity at Cape Wrath and in some open ocean areas.
2. This information is correct at the time of print but the routine **SUBFACTS** and **GUNFACTS** broadcasts, made during the exercise, will provide updated information.
3. The information provided in this booklet will also be published in Fleet Ops Notice to Fishermen, Defence Training Estate Scotland Notice to Fishermen, Cape Wrath Range Notices and Notices to Airmen. This document can also be accessed via the internet at: <http://www.royalnavy.mod.uk/qhm/clyde/jw>.
4. This booklet contains the following sections:
  - a. Submarine Activity.
  - b. Warship Activity.
  - c. Minewarfare Activity.
  - d. Live Firing and Gunnery Activity.
  - e. Denial of GPS Services.
  - f. Unexploded Ordnance Advice.
5. The warships taking part have been instructed to offer fishing vessels and the wider civilian community every assistance in their dealings with exercise activity. This applies especially when in the vicinity of submarines, when warships are conducting live firing or when GPS is denied for military training. You are invited to contact them via VHF to ensure that military training and civilian activities are safely de-conflicted.

6. Throughout JW161 the following points of contact are available on a 24/7 basis to attend to any immediate problems or questions:

Primary - Joint Warrior Duty Controller                      01436 674321 Ext 3401

Secondary - Duty Submarine Controller                      01923 956366

HM Coastguard at Belfast, Stornoway and Aberdeen can also contact the Joint Warrior staff directly and will relay information if necessary.

7. If you have any queries, problems, or suggestions as to how JTEPS can improve this booklet, please do not hesitate to contact the Joint Tactical Exercise planning Staff at the above address.

*[Signed electronically]*

A M Stacey  
Captain Royal Navy  
Captain JTEPS

## Submarine Activity

1. The Submarine Activity Grid on the following page shows the areas and time periods where submarine activity associated with Joint Warrior (JW) is forecast. Please note that other submarines that are not part of the exercise may transit the areas north west of Scotland; their activity is not covered in this brief. The daily SUBFACTS broadcast by the Coastguard will provide notification of the actual areas where exercise and transiting submarine activity is taking place. During Joint Warrior, in order to keep the SUBFACTS broadcast short, a number of Scottish Exercise Areas are grouped together. The groupings are shown in the chartlet and table in this section.

2. Communications can be established with submarines during JW when they are surfaced or at periscope depth on VHF Ch 16 (working Ch 73). In the event that they are operating with warships, one of the warships will have been detailed to act as the Fishing Vessel Safety Ship (FVSS) in accordance with the Code of Practice. The FVSS has two overarching duties:

- a. To make fishing vessels aware of submarine activity in their vicinity and to provide information and advice to minimise the risk of interaction.
- b. To provide assistance to the participating submarine in compiling a comprehensive surface picture in order to minimise the risk of interaction with non-exercise vessels.

3. It is usually easier to establish communications with the FVSS than with a submarine. However, any warship in the vicinity may be contacted and asked for a report on any exercises involving submarines which are being conducted in the local area. Alternatively, the ship may be used to relay messages or instructions to the submarine if required. All warships, including the FVSS, can be contacted on VHF Channel 16 (working Channel 73).

4. If any difficulty is experienced a call should be made to the Duty Submarine Controller at CTF 311 OPS ROOM on the “**Fishermen’s Hotline**” number: **01923 956366**. This line is permanently manned.

## Submarine Activity

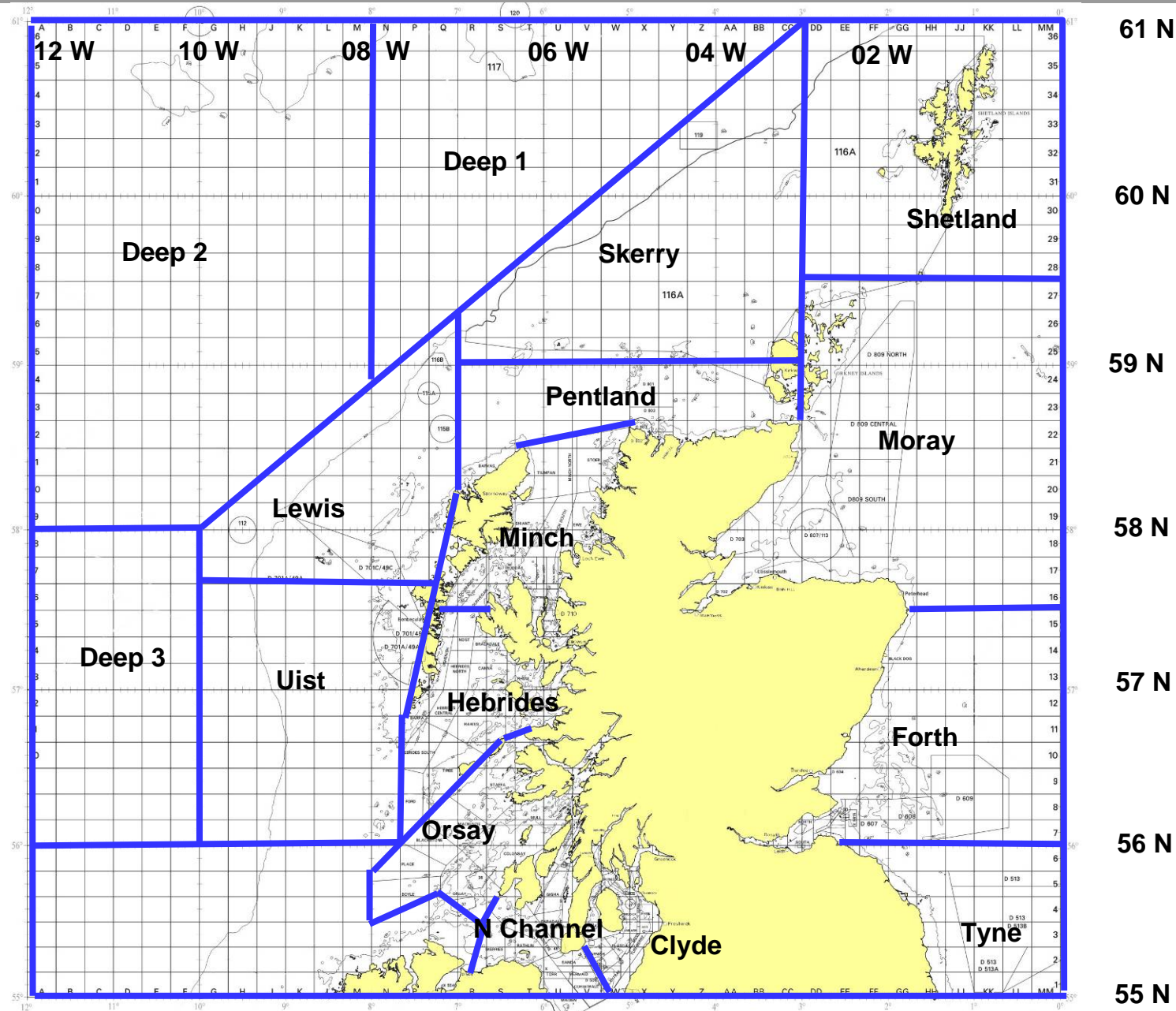
Exercise Joint Warrior 161

### SUBFACTS AREAS ACTIVATION GRID

	10 APR			11 APR			12 APR			13 APR			14 APR			15 APR			16 APR			17 APR			18 APR			19 APR			20 APR			21 APR					
	SUN			MON			TUE			WED			THU			FRI			SAT			SUN			MON			TUE			WED			THU					
Active Time Period BST	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359	0001 - 0800	0800 - 1600	1600 - 2359			
ORSAY			A	A	A	A																																	
N.CHANNEL			A	A																																			
HEBRIDES			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
MINCH									A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A							
UIST										A	A	A	A	A	A																								
LEWIS																A	A	A	A	A	A	A	A	A	A	A	A												
PENTLAND																A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
SKERRY																			A	A	A	A	A	A	A	A	A	A	A	A									
DEEP 1																A	A	A	A	A	A	A	A	A	A														
DEEP 2													A	A	A	A	A	A	A	A	A	A	A	A	A	A													
DEEP 3													A	A	A	A	A	A	A	A	A	A	A	A															
SHETLAND																																							
MORAY																																							
FORTH																																							
TYNE																																							

The planned activity in the JW SUBFACTS AREAS is indicated by the letter **A** in the grid above. There may be changes to this planned activity. Daily SUBFACTS Broadcasts will contain the most up to date information regarding the activation of the areas.

# Submarine Activity



JW SUBFACTS  
Area Groupings

### VHF Challenges

1. In light of ever changing threats to our Armed Forces, military ships maintain a detailed plot of maritime activity in their vicinity, which includes establishing the identity of small fishing vessels. This can be achieved visually from helicopters or by challenges on IMM VHF radio by ships. Mariners are advised that warships from various Allied Nations will be conducting such reconnaissance and challenges. Areas likely to be affected are the Clyde, North Channel, South of the Sea of Hebrides, the Sea of Hebrides, the Little Minch, North Minch, the area near Cape Wrath, Loch Eriboll, the Outer Hebrides and in the North Sea near Wick. Mariner's co-operation during this time would be much appreciated. A small number of contracted civilian vessels including high speed craft will be operating in the vicinity of the Minches, Mallaig and the Sound of Sleat in support of this training task. Every effort will be made to avoid interference to fishing vessels.

## Minewarfare Activity

1. Mine Countermeasures (MCM) vessels will conduct mine hunting exercises using sonar to look for exercise inert mines both on the seabed and moored to the seabed. These may then be investigated by remote controlled submersible vehicles and divers.
2. Towed sweeps for minesweeping will not be used during JW 161.
3. All participating MCM vessels will be thoroughly briefed on local fishing operations in advance of the exercise and are instructed to make early liaison calls to fishing vessels on VHF. Skippers of fishing vessels operating in the vicinity of these ships are encouraged to talk to them and discuss intentions.
4. If any difficulty is experienced a call should be made to the Duty Submarine Controller at CTF 311 OPS ROOM on the “**Fishermen’s Hotline**” number: **01923 956366**. This line is permanently manned.
5. The following MCM vessels will participate in Exercise JW 161:

Name	Nationality	Pennant No
HMS HURWORTH	UK	M 39
HMS CATTISTOCK	UK	M 31
HMS GRIMSBY	UK	M 108
HMS RAMSEY	UK	M 110
HMS BLYTH	UK	M 111
FGS DILLINGEN	Germany	M 1065
BNS PRIMULA	Belgium	M 924
HNLMS VLAARDINGEN	Netherlands	M 863
HNOMS OTRA	Norway	M 351
FNS CEPHEE	France	M 652
FNS STYX	France	M 614

6. Exercise inert mines have been laid for JW 161, in the following areas:
  - a. **LOCH EWE** (see chartlet 1)

All areas within Loch Ewe between latitudes 57 54.30N and 57 47.80N
  - b. **EILEAN DUBH** (see chartlet 1)
    - A. 57 59.23N 005 23.10W
    - B. 57 58.85N 005 23.10W
    - C. 57 58.75N 005 26.84W
    - D. 57 59.60N 005 26.90W
  - c. **CARN SKERRIES/HORSE ISLAND** (see chartlet 1)
    - A. 57 56.26N 005 17.20W
    - B. 57 56.91N 005 16.81W
    - C. 57 58.44N 005 23.08W

## Minewarfare Activity

D. 57 58.64N 005 22.58 W

d. **PRIEST ISLAND** (see chartlet 1)

A. 57 56.92N 005 30.53W

B. 57 56.92N 005 29.53W

C. 57 56.04N 005 29.53W

D. 57 56.04N 005 30.53W

e. **MINCHES** (see chartlet 2)

Along the following line:

A. 57 50.18N 006 16.06W

B. 57 56.36N 006 08.47W

C. 58 02.78N 005 59.67W

f. **CAMPBELTOWN APPROACHES** (see chartlet 3)

A. 55 27.48N 005 31.96W

B. 55 27.48N 005 18.82W

C. 55 17.63N 005 18.82W

D. 55 17.63N 005 31.96W

g. **SOUND OF SLEAT** (see chartlet 4)

A. 57 01.29N 005 49.91W

B. 57 00.88N 005 49.02W

C. 56 58.93N 005 54.38W

D. 56 59.72N 005 54.82W

h. **EIGG** (see chartlet 5)

A. 56 58.62N 006 06.01W

B. 56 58.62N 006 02.04W

C. 56 55.59N 006 02.04W

D. 56 55.59N 006 06.01W

i. **MUCK** (see chartlet 5)

A. 56 51.92N 006 12.52W

B. 56 51.92N 006 05.44W

C. 56 46.07N 006 05.44W

D. 56 46.07N 006 12.52W

7. The planned mine lay and recovery programme is as follows:

a. **Mine lay.** No additional mine targets will be laid without further Notice to Fishermen. All the above areas are established exercise areas with existing targets on the sea bed.

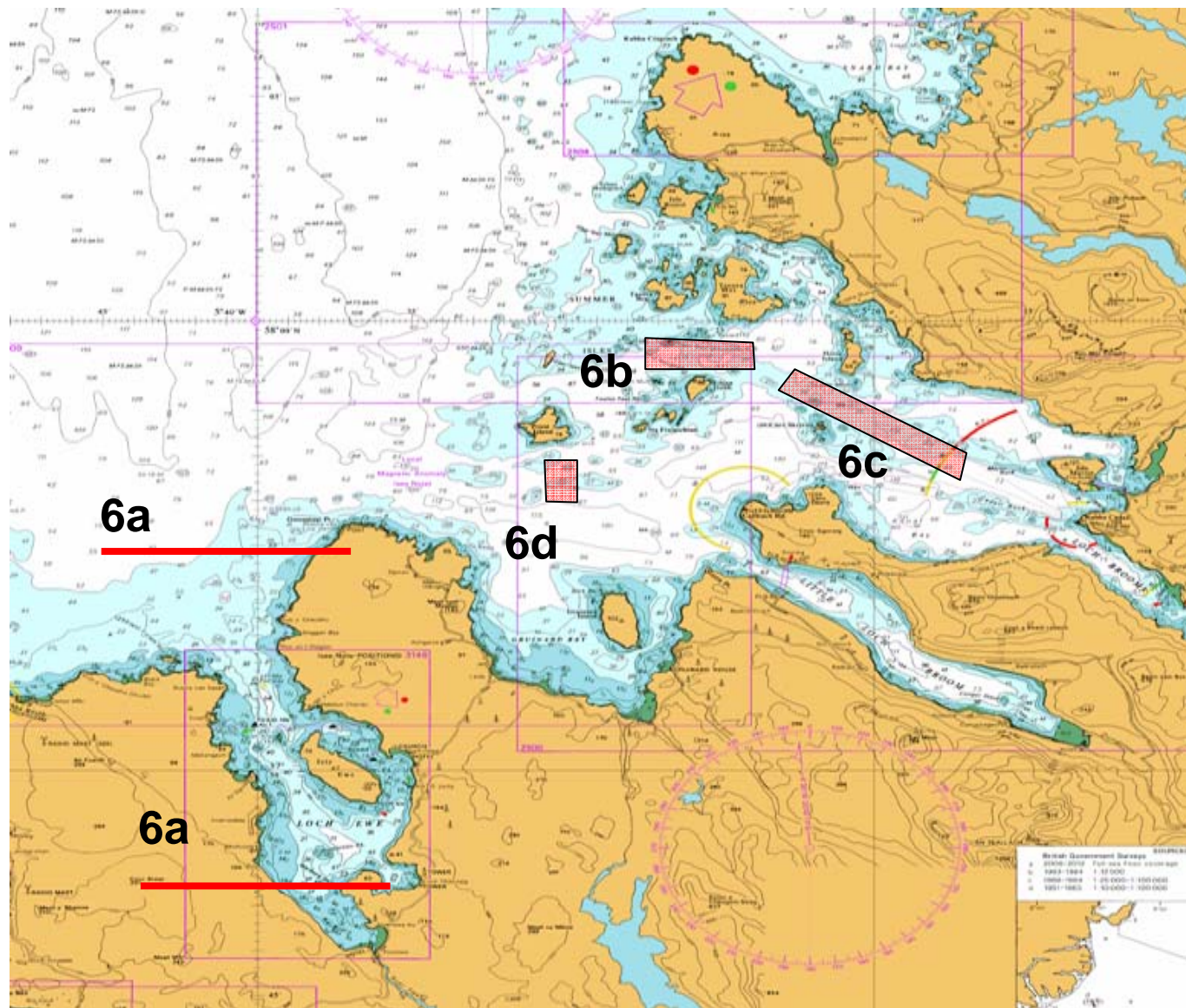


## Minewarfare Activity

b. **Mine recovery.** There is no dedicated mine recovery period during JW 161. This will occur throughout the exercise.

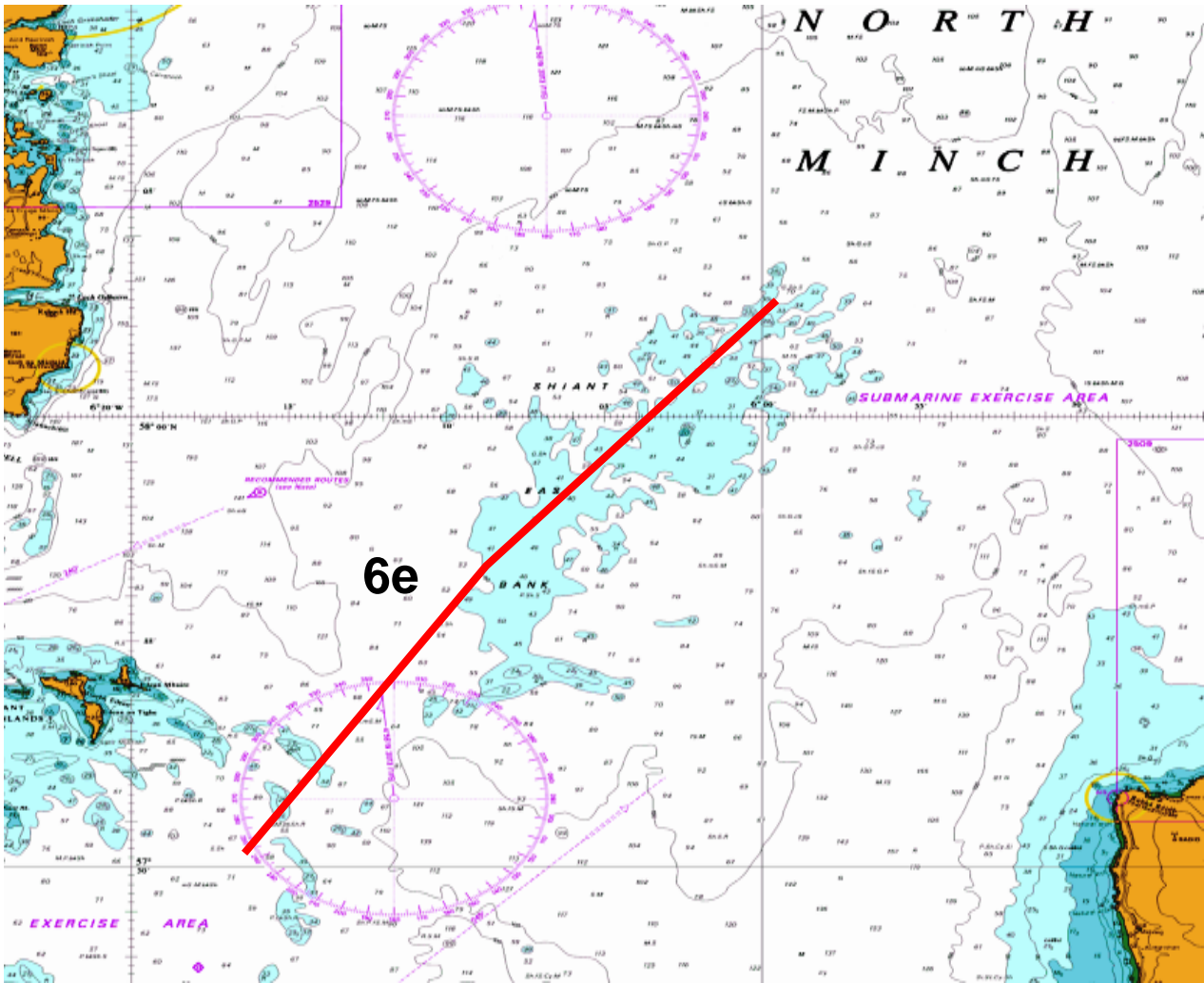
8. Liaison between the MoD and appropriate fishermen's associations/organisations, in some cases with individual owners/skippers, HM Coastguard and Marine Scotland have been made to use the above areas. Should anyone consider that their organisation/association should be included in this process in future please contact Lieutenant Commander David Smith (FASFLOT SOO) on 01436 674321 Ext 8421.

# Minewarfare Activity



Chartlet 1

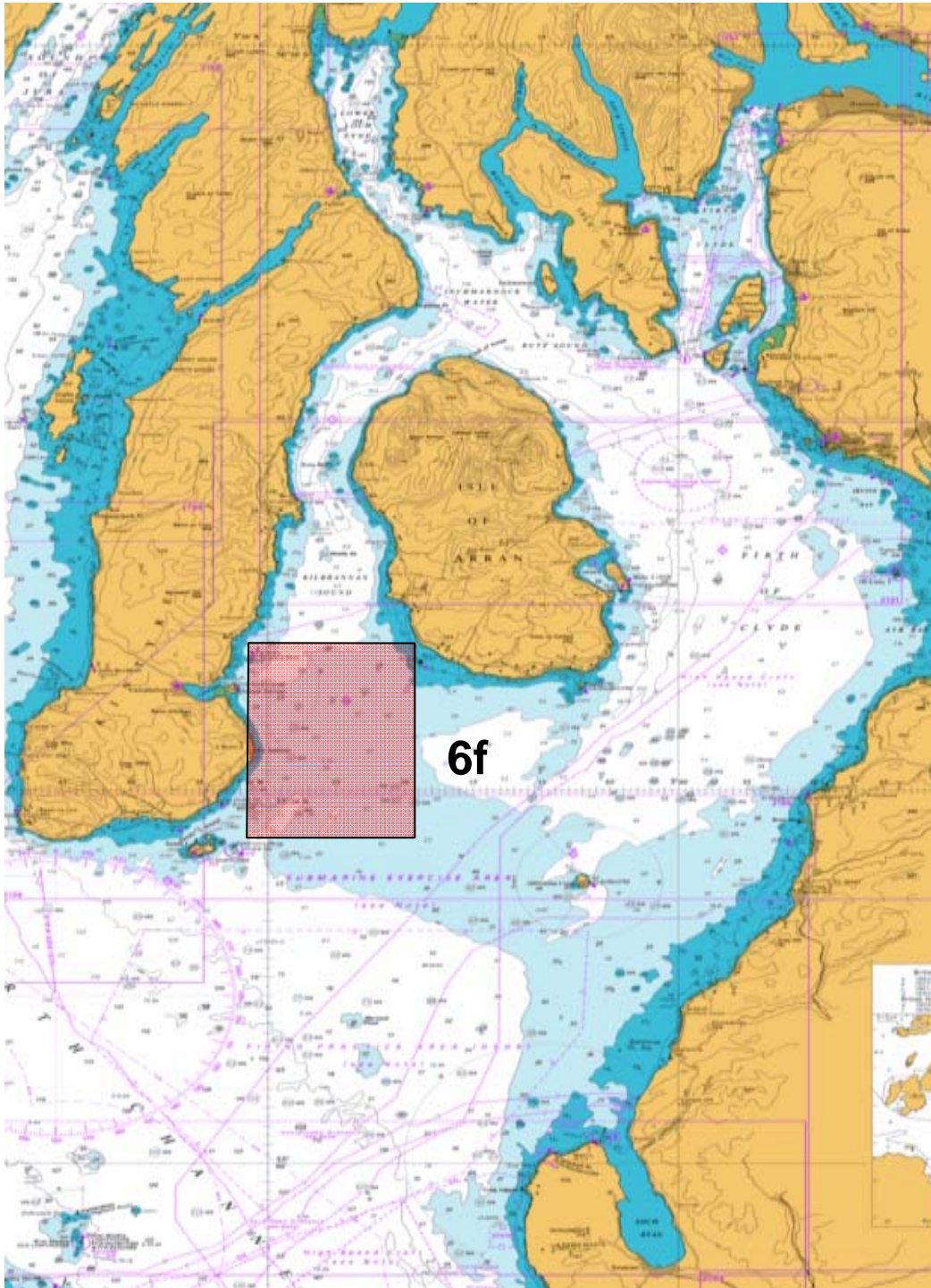
# Minewarfare Activity



Chartlet 2



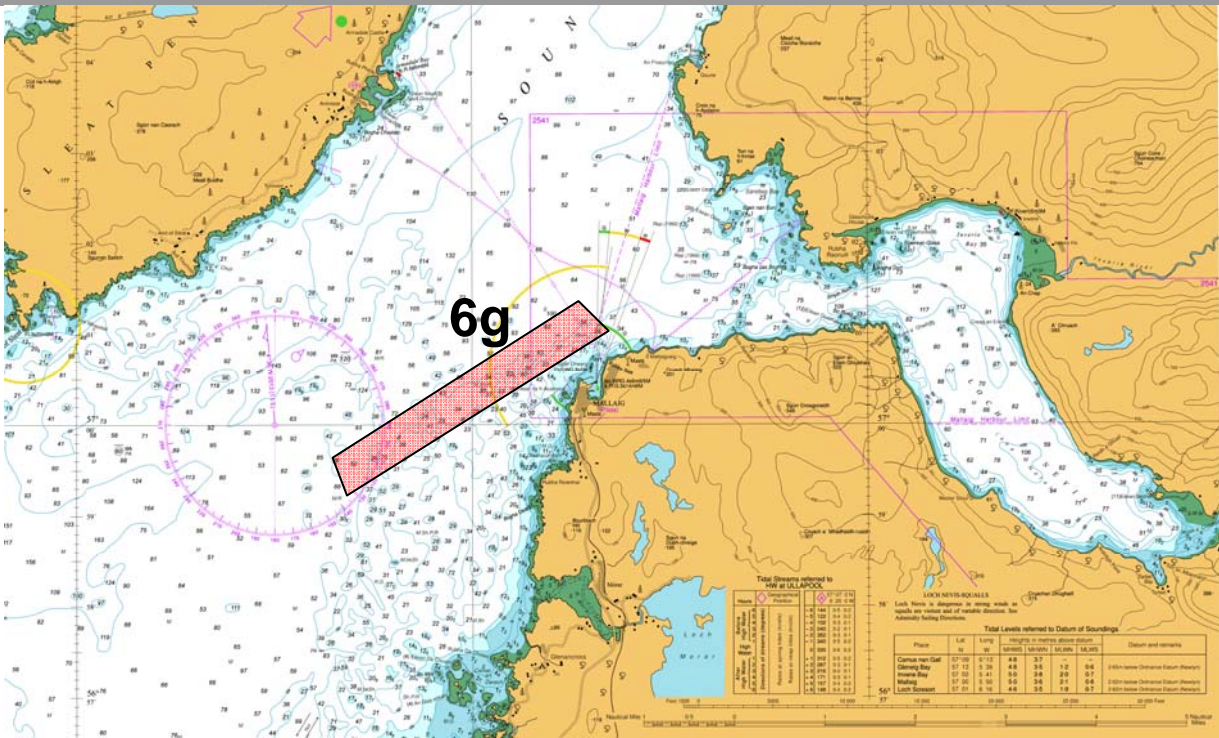
## Minewarfare Activity



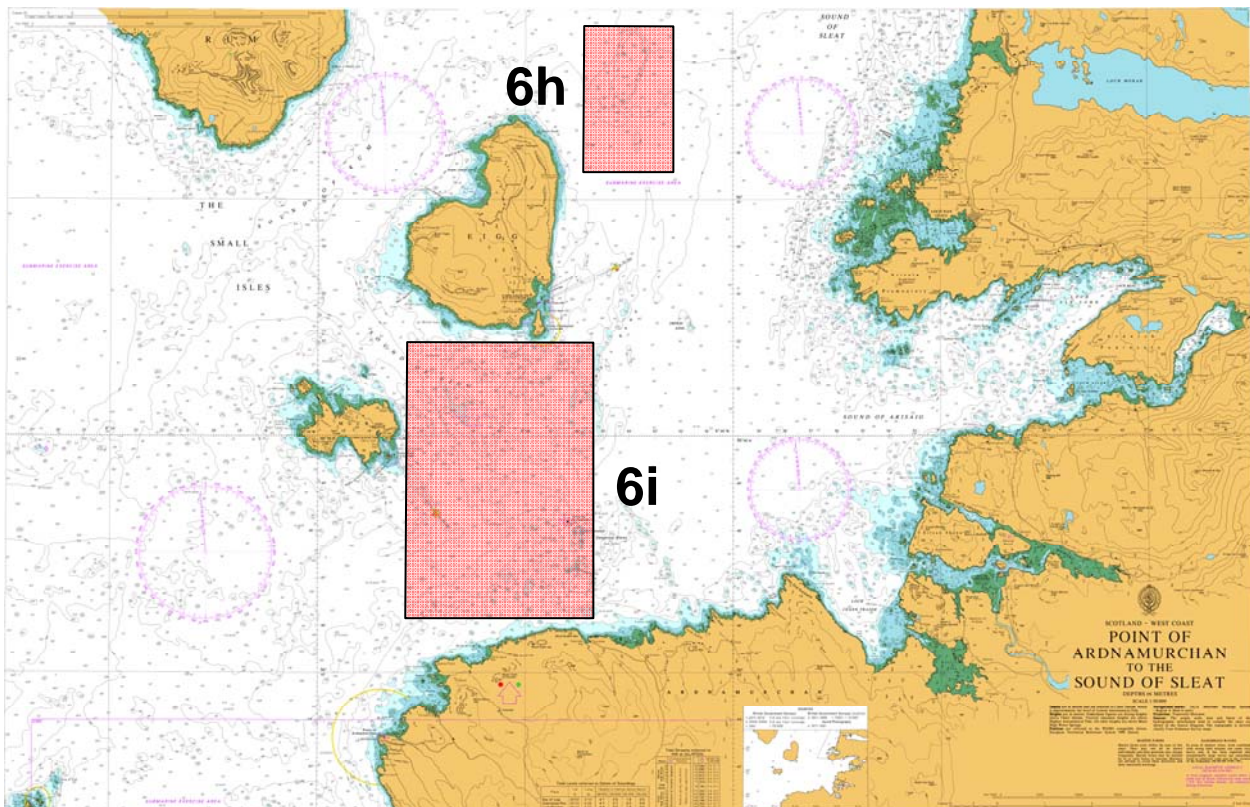
Chartlet 3



# Minewarfare Activity



## Chartlet 4



## Chartlet 5

## Live Firing and Gunnery

1. During Joint Warrior, Cape Wrath Range, including Garvie Island (An Garbh-eilean) will be active with various combinations of air bombardment, naval gunfire support and helicopter operations. In addition a Joint Warrior Firing and Danger Area will be activated for offshore gunnery. The Gunfacts and JW Offshore Firing Areas Activation Grid on the following page shows the areas and time periods where gunnery associated with Joint Warrior is forecast to take place. The daily GUNFACTS Broadcast by the Coastguard and Cape Wrath Range will provide notification of the actual areas where all the gunnery activity is taking place.
2. Joint Warrior Firing and Danger Area coordinates are in the accompanying chartlet.
3. It is mandatory that vessels in the vicinity of the Cape Wrath Range keep a listening watch on VHF Channel 16. Further information regarding firing at can be obtained by telephoning:

**Cape Wrath Information Line on  
FREEPHONE 0800 833300**

or **01862 892185**

The number will provide specific information about active/non-active periods and when the Range road (U70) will be open/closed for public access.

## Live Firing and Gunnery

Exercise Joint Warrior 161

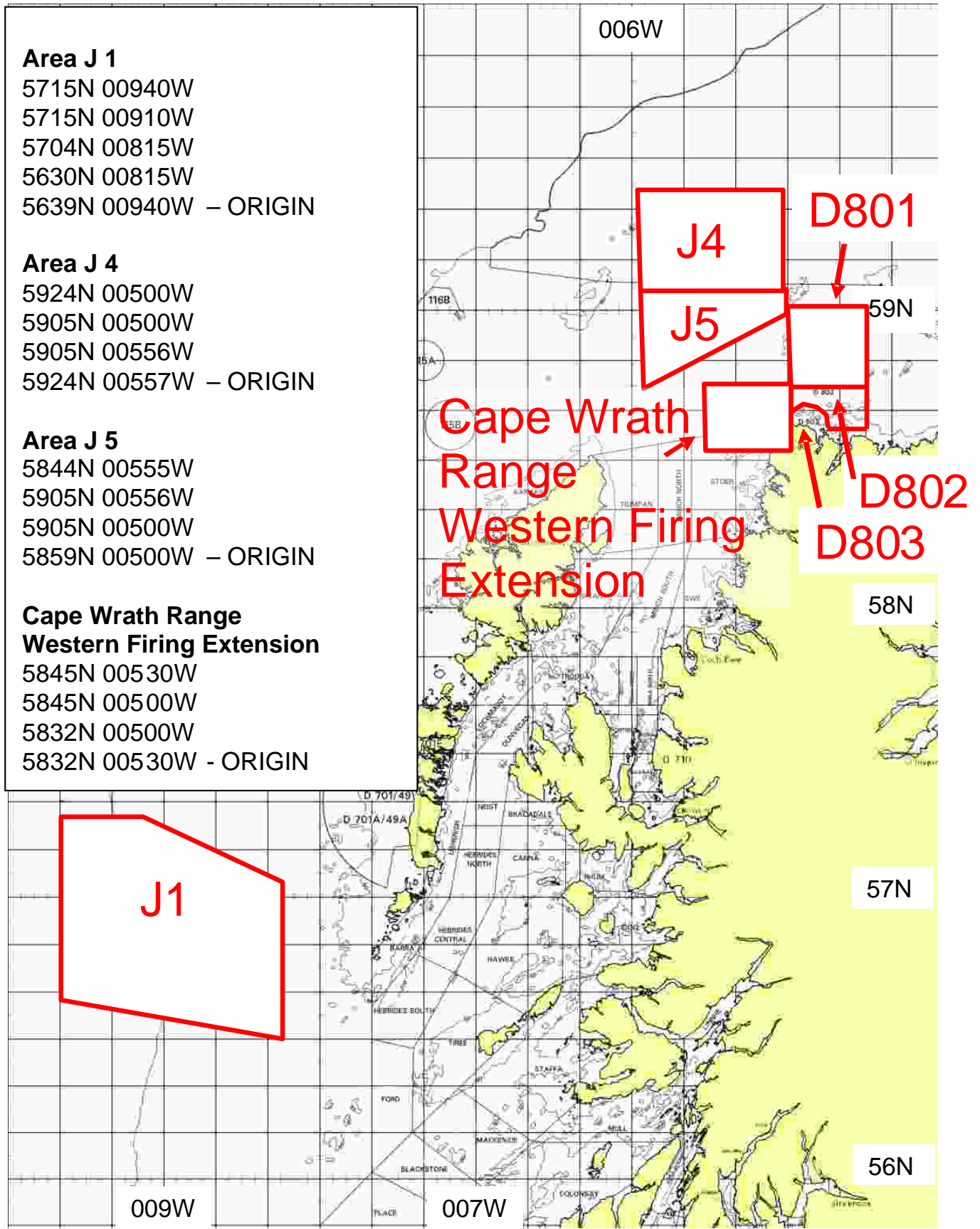
### GUNFACTS AND JW OFFSHORE FIRING AREAS ACTIVATION GRID, ALL TIMES IN LOCAL

	10 APR	11 APR	12 APR	13 APR	14 APR	15 APR	16 APR	17 APR	18 APR	19 APR	20 APR	21 APR
	SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU
<b>Cape Wrath Range (Ashore)</b>	0001-2359	0001-2359	0001-2359	0001-2359	0001-2359	0001-2359	0001-2359		0001-2359	0001-2359	0001-2359	0001-2359
<b>Cape Wrath D801</b>						0900-1800	1400-2359					
<b>Cape Wrath D802</b>						0900-1800	1400-2359		0800-2359	0800-2359		
<b>Garvie Island D803</b>						0900-1800	1400-2359		0800-2359	0800-2359		
<b>JW Danger Area J1</b>			0815-1400	0830-1400	0830-1500							
<b>JW Danger Area J4</b>												
<b>JW Danger Area J5</b>												
<b>Cape Wrath Western Firing Extension</b>												
<b>Clyde Areas D 509</b>	1300-2100	1300-1930		1000-1830	1200-1630							

The planned times of firings at Cape Wrath Range and Joint Warrior Firing areas is indicated in the grid above. There may be changes to this planned activity. Daily GUNFACTS Broadcasts and Cape Wrath Range Broadcasts will contain the most up to date information regarding the activation of the areas. Times are Local.

# Live Firing and Gunnery

## Joint Warrior Firing and Danger Areas

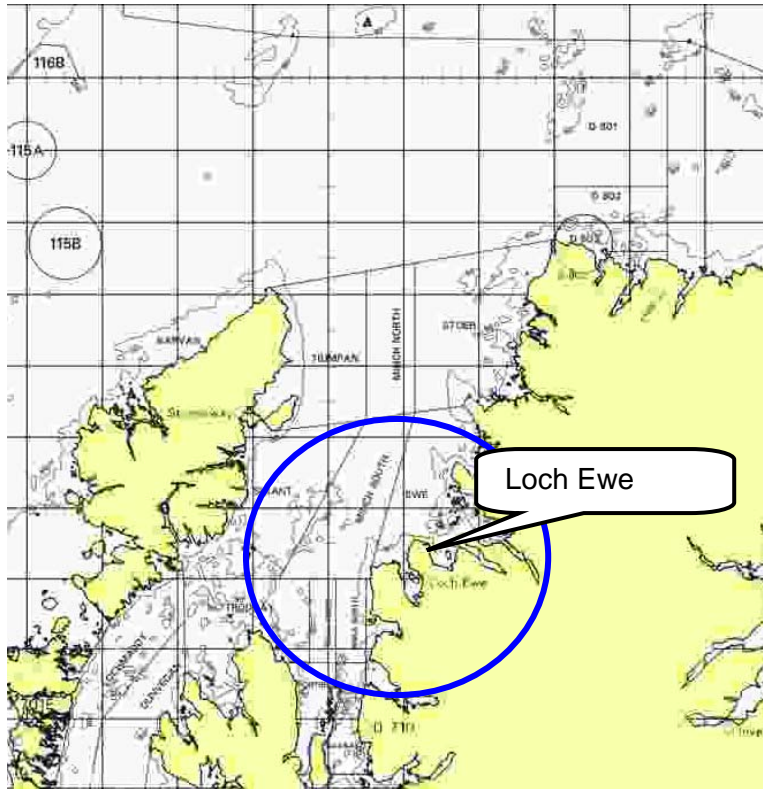




## Denial of GPS Service

1. Denial of GPS services through the jamming of the GPS signal is an essential part of preparation for military operations and the training is likely to impact on both military and civilian users on land, sea and in the air. The ability to conduct jamming is spread throughout the modern world. Consequently, Military Forces are required to train under such conditions in order to demonstrate the effects it has on systems and to train personnel in other modes of operating. The jamming equipment is located at:

- a. Loch Ewe - 57 51.9N 005 41.1W



2. Jamming of GPS signals may affect equipment using GPS within the North Minch northwards from Rubha Réidh 57-52N 005-48W to Stoer Head 58-14N 005-24W, depending on receiver antenna height. Plots showing predictions of areas where interference can be expected are included at the end of this section.

3. Subject to approval from the MOD to conduct GPS denial training, the planned times of GPS Denial are shown in the time table on the next page. A sécurité message will be broadcast by Stornoway and Shetland CG prior to and on completion of the jamming period, during which time GPS receivers and any related equipment may not function, or may give incorrect position info or default to DR mode. If this occurs, positional assurance will have to be determined by other means and manually updated at regular intervals. Crews should be aware of these limitations and use alternative means of navigation during jamming periods to confirm their position and check the equipment on completion. Military vessels in the Faraid Head jamming area are, as part of their Gunnery clear range procedure, to inform civilian vessels in their vicinity via VHF that GPS jamming is taking place and that they should manually update their DSC position.

## Denial of GPS Service

4. All military vessels and aircraft will be ordered to maintain a lookout for any abnormal vessel behaviour during jamming periods and warn vessels as required
5. Stopping the jamming in the event of an emergency can be achieved via VHF to Stornoway CG or Joint Warrior duty controller 01436 674321 Ext 6469.

### GPS DENIAL TIME TABLE

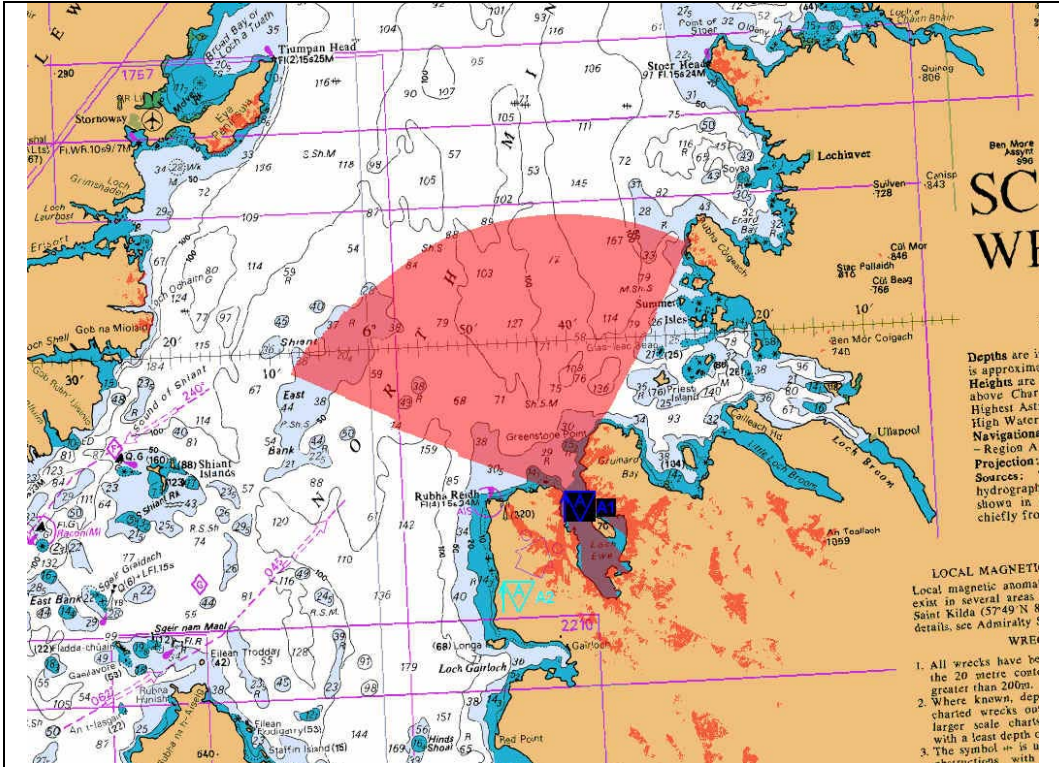
Date	Loch Ewe N57 51.9 W005 41.1
Tues 12 Apr 16	0700-0830
	1800-1930
Wed 13 Apr 16	1230-1330
	1800-1930
Thurs 14 Apr 16	0700-0830
	1800-1930
Fri 15 Apr 16	1230-1330
	1800-1930
Sat 16 Apr 16	1000-1100
	1600-1700
Sun 17 Apr 16	1000-1100
	1100-1200
Mon 18 Apr 16	0700-0800
	1830-1930
Tue 19 Apr 16	0700-0800
	1830-1930
Wed 20 Apr 16	0700-0800
	1830-1930
Thu 21 Apr 16	0700-0800

Times are local time.

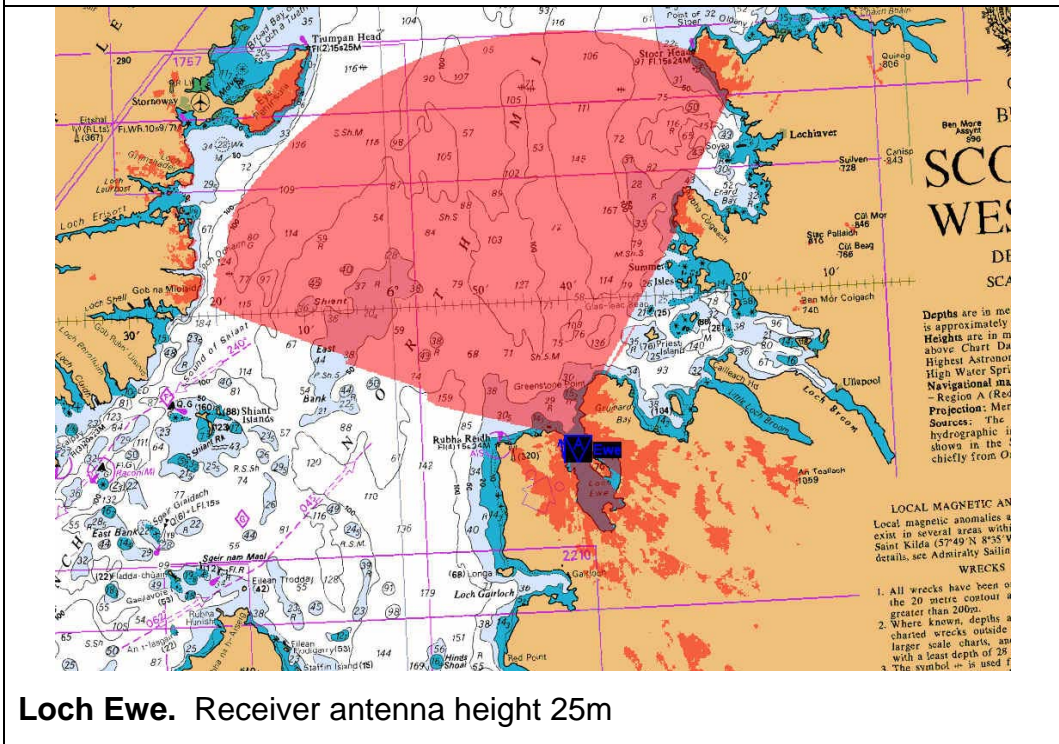
# Denial of GPS Service

## GPS RECEIVER INTERFERENCE PREDICTION PLOTS FOR LOCH EWE

The shaded areas represent the 30dB J/S threshold vs the minimum GPS L1 C/A-Code measured signal strength of -157dBW.



Loch Ewe. Receiver antenna height 4m



Loch Ewe. Receiver antenna height 25m

## Unexploded Ordnance Advice

1. The following general advice is offered to anyone discovering anything believed to be unexploded ordnance:

<b>DIVERS</b>	DO NOT TOUCH
<b>FISHERMEN</b>	Contact the coastguard. If this is not possible, lay the item in about 60ft of water, away from shipping routes and mark the position with a float.
<b>EVERYONE</b>	DO NOT TOUCH – dial 999 for coastguard or Police.

## Contact Telephone Numbers

<b>UNEXPLODED ORDNANCE (FLEET DUTY CONTROLLER)</b>	<b>01923 956367</b>
<b>FISHERMANS' HOTLINE (FLEET DUTY CONTROLLER) SUBMARINE RELATED</b>	<b>01923 956366</b>
<b>HOTLINE (JOINT WARRIOR DUTY CONTROLLER) GPS JAMMING RELATED</b>	<b>01436 674321 Ext 6469</b>
<b>JOINT WARRIOR CONTROLLER</b>	<b>01436 674321 Ext 3401</b>
<b>CAPE WRATH INFORMATION LINE</b>	<b>FREEPHONE 0800 833300</b>

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