2 October 2016

JOINT WARRIOR 162 SUBMARINE, MINEWARFARE, LIVE FIRING, UNMANNED SYSTEMS AND DENIAL OF GPS TRAINING ACTIVITY

1. Exercise JOINT WARRIOR 162 (JW162) will take place between 8 and 20 October 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 15 Nations. The majority of the exercise will be focussed in the airspace, offshore and coastal waters to the North and North West of Scotland. During this exercise, there will also be unmanned vehicles operating in the Northern Minch and Sea of the Hebrides from 2 October. 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. Unmanned Systems.
   f. Denial of GPS Services.
   g. 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 JW 162 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
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 162
SUBFACTS AREAS ACTIVATION GRID

<table>
<thead>
<tr>
<th>Active Time Period BST</th>
<th>9 OCT</th>
<th>10 OCT</th>
<th>11 OCT</th>
<th>12 OCT</th>
<th>13 OCT</th>
<th>14 OCT</th>
<th>15 OCT</th>
<th>16 OCT</th>
<th>17 OCT</th>
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<th>20 OCT</th>
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<td>MON</td>
<td>TUE</td>
<td>WED</td>
<td>THU</td>
<td>FRI</td>
<td>SAT</td>
<td>SUN</td>
<td>MON</td>
<td>TUE</td>
<td>WED</td>
<td>THU</td>
</tr>
<tr>
<td>0001 - 0800</td>
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<td>2359</td>
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<td>0800</td>
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<td>2359</td>
<td>0800</td>
</tr>
</tbody>
</table>

ORSAY
N.CHANNEL
HEBRIDES
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LEWIS
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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 A A A A A A
SKERRY
DEEP 1
DEEP 2
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
DEEP 3
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
SHETLAND
MORAY
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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.
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.

Small Boat Activity

2. On Sunday 9 and Monday 10 October, north of Arran a large number of fast small boats (both contracted civilian and military) will operate with Warships and helicopters. This activity will remain clear of the main shipping and ferry routes. Small boats taking part in this will indicate their participation by showing a green flag.
1. Mine Countermeasures (MCM) vessels will conduct mine hunting exercises using sonar to look for exercise inert mines (known as shapes) 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 may be used during JW 162. Sweeping activity, including all streaming, recovery of gear and turns will be confined to a maximum of 1000 yds either side of a line between:

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57 56.36N 006 08.47W
58 02.78N 005 59.67W
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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 162:

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Pennant No</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMS CATTISTOCK</td>
<td>British</td>
<td>M31</td>
</tr>
<tr>
<td>HMS HURWORTH</td>
<td>British</td>
<td>M39</td>
</tr>
<tr>
<td>HMS PEMBROKE</td>
<td>British</td>
<td>M107</td>
</tr>
<tr>
<td>HMS RAMSEY</td>
<td>British</td>
<td>M110</td>
</tr>
<tr>
<td>FGS ELBE</td>
<td>German</td>
<td>A511 (Support Vessel)</td>
</tr>
<tr>
<td>HMNoS MALOY</td>
<td>Norwegian</td>
<td>M342</td>
</tr>
<tr>
<td>HNLMS WILLEMSTAD</td>
<td>Netherlands</td>
<td>M864</td>
</tr>
<tr>
<td>ENS SAKALA</td>
<td>Estonia</td>
<td>M314</td>
</tr>
<tr>
<td>HMS GRIMSBY</td>
<td>British</td>
<td>M108</td>
</tr>
<tr>
<td>BNS NARCIS</td>
<td>Belgium</td>
<td>M923</td>
</tr>
<tr>
<td>IMANTA</td>
<td>Latvia</td>
<td>M04</td>
</tr>
</tbody>
</table>

6. Exercise MCM operations will take place in the following areas (areas shown are representation of the areas where the MCMVs will operate:

   a. Chartlet 1:
      i. Loch Ewe and Approaches
      ii. Gruinard Bay and Approaches
      iii. Loch Broom and Approaches
      iv. Little Loch Broom and Approaches
   b. Chartlet 2 - Shiant Bank
   c. Chartlet 3 - Campbeltown and Approaches
Minewarfare Activity

d. Chartlet 4 – Sound of Rhum, Sound of Eigg, Sound of Sleat, Mazwell Bank.

7. The planned shape (inert training exercise mines) lay and recovery programme.
   a. No additional shapes will be laid without further Notice to Fishermen. All the above areas are established exercise areas with existing targets on the sea bed.
   b. There is no dedicated shape recovery period during JW 162. This will occur throughout the exercise.

8. A diving team will conduct mine warfare diving operations within Loch Gairloch (5742N 00542W).
9. 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 Tony Hampshire (FOSNNI SMCDO) on 01436 677263.

10. 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.

11. If any difficulty is experienced a call should be made to the DSMC at CTF 311 OPS ROOM on the “Fishermen’s Hotline” number, 01923 956366. This line is permanently manned.
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.
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.
Joint Warrior Firing and Danger Areas

Area J 1
5715N 00940W
5715N 00910W
5704N 00815W
5630N 00815W
5639N 00940W – ORIGIN

Area J 4
5924N 00500W
5905N 00500W
5905N 00556W
5924N 00557W – ORIGIN

Area J 5
5844N 00555W
5905N 00556W
5905N 00500W
5859N 00500W – ORIGIN

Cape Wrath Range
Western Firing Extension
5845N 00530W
5845N 00500W
5832N 00500W
5832N 00530W - ORIGIN
1. Alongside Joint Warrior 162, unmanned air, surface and sub-surface vehicles will be operating within the Northern Minch and Sea of the Hebrides. Activity will commence on 2 October 16 in sea area Erisort, on 2 October in areas Raasay, Crowlin and Rona (see chartlet below) and on 8 October elsewhere within the Northern Minch and Sea of the Hebrides. All activity will be complete by 20 October 16.

a. **Erisort (within 15nm of Stornoway Harbour).** Up to seven unmanned surface vehicles will be deployed within 15nm of Stornoway Harbour from 1-20 October. These vehicles, which are approximately 2m x 1m in size and have a maximum speed of 2 knots, will display navigation lights at night. They have collision avoidance software linked to a received AIS feed. Additionally, one unmanned sub-surface vehicle may be operating during daylight hours; it will be launched and recovered daily and controlled by a support vessel, SD Warden, which will remain in attendance throughout.

b. **Raasay, Crowlin and Rona.** Unmanned surface and sub-surface vehicles will be operating in the BUTEC Range and Kyle of Lochalsh between 2 and 20 October. Detailed timings and areas have been published by separate navigation warning (WZ 1112 refers)

c. **Northern Minch and Sea of the Hebrides** Unmanned air vehicles will be operating during daylight hours over the Northern Minch and Sea of the Hebrides from 8-20 October; they will be launched, recovered and controlled from either the Hebrides Range or MV Northern River. MV Northern River will also be operating unmanned surface vehicles within 10nm of her position; the operators will follow the code of conduct for unmanned surface vessels published by the UK Maritime Autonomous Systems Regulatory Working Group (MASRWG), which includes complying with the International Regulations for the Prevention of Collisions at Sea.

2. Throughout JW 162 the following points of contact are available:

Hebrides Range Battle Watch Captain (0800A-1800A) 01870 604449

Outside these times:

Joint Warrior Duty Controller (9-20 October) 01436 674321 Ext 3401
Duty Submarine Controller (“Fishermen’s Hotline”) 01923 956366
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. Faraid Head - 58 36.2N 004 46.4W
   b. 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 and within 35 nautical miles line of sight from the Faraid Head jamming site, 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
Denial of GPS Service

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.

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**

<table>
<thead>
<tr>
<th>Date</th>
<th>Loch Ewe 57 51.9 N 005 41.1 W</th>
<th>Faraid Head 58 36.2 N 004 46.4 W</th>
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<td>-</td>
<td>Intermittently for periods no greater than 40 mins</td>
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<td>Mon 17 Oct</td>
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<td>1100-1200</td>
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<td>Tue 18 Oct</td>
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<tr>
<td>Thu 20 Oct</td>
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Times are local time.
Denial of GPS Service

GPS RECEIVER INTERFERENCE PREDICTION PLOTS FOR FARAID HEAD

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

Faraid Head. Receiver antenna height 4m

Faraid Head. Receiver antenna height 25m

Plots reproduced with permission of DSTL.
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.

Plots reproduced with permission of DSTL
1. The following general advice is offered to anyone discovering anything believed to be unexploded ordnance:

**DIVERS**

DO NOT TOUCH

**FISHERMEN**

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.

**EVERYONE**

DO NOT TOUCH – dial 999 for coastguard or Police.

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### Contact Telephone Numbers

<table>
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<tr>
<td>UNEXPLODED ORDNANCE (FLEET DUTY CONTROLLER)</td>
<td>01923 956367</td>
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<td>FISHERMANS’ HOTLINE (FLEET DUTY CONTROLLER)</td>
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<tr>
<td>SUBMARINE RELATED</td>
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<td>HOTLINE (JOINT WARRIOR DUTY CONTROLLER)</td>
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<td>GPS JAMMING RELATED</td>
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<tr>
<td>JOINT WARRIOR CONTROLLER</td>
<td>01436 674321 Ext 3401</td>
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<tr>
<td>CAPE WRATH INFORMATION LINE</td>
<td>FREEPHONE 0800 833300</td>
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</tbody>
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Joint Tactical Exercise Planning Staff, JHQ Room 501, Northwood Headquarters, Sandy Lane, NORTHWOOD, Middlesex HA6 3HP

E-Mail: JTEPS-SM-SO2@mod.uk