UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center - Pacific
2002 SE Marine Science Drive
Newport, OR 97365

25 January, 2013

MEMORANDUM FOR: Captain Wade J. Blake, NOAA
Commanding Officer, Marine Operations Center - Pacific

Colin Little LCDR NOAA
Digitally signed by LITTLE.COLIN.D.1271718981
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=LITTLE.COLIN.D.1271718981
Date: 2013.01.25 13:18:44 -08'00'

FROM: Lieutenant Commander Colin D. Little, NOAA
Deputy Chief of Operations, Marine Operations Center - Pacific

SUBJECT: Amendment 1 to final project instructions, *Oscar Dyson*
DY-13-02.

Please amend the subject project instructions dated 11 December 2012, as follows:
(Please see included .pdf file)

Wade J Blake
Digitally signed by BLAKE.WADE.JAMES.1025936538
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=NOAA, cn=BLAKE.WADE.JAMES.1025936538
Date: 2013.01.25 15:14:07 -08'00'

APPROVED _____ DISAPPROVED _____ LET'S DISCUSS _____

NOAA Ship Oscar Dyson loading/gear trials (Jan 2013)

Scientific Personnel

MACE:	Chris Wilson (lead), Scott Furnish, Rick Towler, Taina Honkalehto, Darin Jones
Groundfish:	Wayne Palsson (lead), Paul von Szalay, Gary McMurrin
FOCI:	Matt Wilson (lead)

Itinerary

Day 1

Morning:	vessel loading – e.g. trawl gear, MACE, Groundfish and FOCI equipment (hand-carry and some crane transfer).
Afternoon:	FOCI Stauffer trawl project (min 3 h, max 9 h including some time on days 2 and 3).
Evening:	anchor up in Port Madison. If conditions are unsuitable, transit to Port Susan.

Day 2 Conduct sphere calibration as soon as conditions permit (4 h)

Afternoon/eve: Groundfish PNE project (2 h min, 5-6 h max)

Day 3 Complete GF PNE trawl and FOCI Stauffer trawl projects – as time allows.

Embark/debark details TBD once plan is approved. Anticipate small boat transfers at Shilshole.

Projects

Prior to gear trials, the Stauffer trawl and PNE trawl are to be loaded on to the net reels. After gear trials are complete, the Stauffer trawl will be replaced w/ the AWT. The AWT should be streamed before entering the open sea to tension properly on the net reel.

1) Sphere calibration at anchor in Port Madison (priority 1, Appendix 1)
2) Groundfish PNE trawl project (priority 2). Details are provided in Appendices 2 and 3. Appendix 2 describes a comprehensive experimental design with 6 tows planned (5-6 h). An abbreviated plan with only 2 tows is provided in Appendix 3.
3) FOCI Stauffer trawl project (priority 3). Two options are described in Appendix 4:
    a. Full-blown effort w/ 4-6 tows total (6-9 h)
    b. Bare minimum effort w/ 2 tows (3 h)

Appendix 1

w/ vessel at anchor in Port Madison …

CTD (**0.5 hr**) – include ship CTD along w/ MACE CTD and SBE units

Centerboard transducer calibration (**3 hr**) – swing

Pull anchor (**1 hr**)

Tasks w/ no vessel time needed: XBT drop, confirm –20 & –80 freezers operational, test the pumped-seawater system and SCS data collection, CLAMS dry run

Appendix 2

GAP Gear Trial Study Plan, January 2013

Goal:

Develop simultaneous net mensuration capability between Marport and Scanmar systems on Polynoreastern survey nets.

Purpose:

The Groundfish Assessment Program of RACE is implementing a new net mensuration system for its bottom trawls. The new Marport system has shown inconsistencies and problems in performance so we want to conduct calibration or bias trials before and during the use of the new equipment. During the 2013 GOA Bottom Trawl Survey, we hope to collect simultaneous net measurements with the old (Scanmar) and new (Marport) systems on one vessel in order that we may collect many paired measurement observations. The Bering Sea group has been able to do this with their ageing Netmind equipment, and simultaneously deployed the Netmind and Marport system in an "X" pattern on wings. The Marport and Scanmar system may be incompatible while deployed at the same time. We desire to test several assumptions and configuration in the set up prior to the field season, and the gear trials aboard the R/V Oscar Dyson this January would afford us this opportunity.

Objectives:

1. Determine whether net widths differ along the bridle forward of the wings.
2. Determine whether the "X" pattern biases the measurement of the net width.
3. Determine whether the Scanmar and Marport systems can be simultaneously placed on the headrope.
4. Determine the amount of separation needed between the master units for effective communication back to the hull mounted or trailing transducer.
5. Determine whether a single slave can be used for both the Scanmar and Marport master sensors.

Approach:

We will rig the vessel with two Scanmar receivers capable of receiving two different frequencies and a Marport receiver and Marport sensors capable of being programmed at different frequencies. Scanmar units have been shown to provide accurate net measurements. We will require the use of the MACE Polynoreastern bottom trawl which would be fished on the bottom for 15 minutes or less with the cod end open. One pair of sensors will be placed at the usual position on the upper bridle just forward of the wing shackle. The second pair of sensors will be placed forward of this position starting at least one meter on the bridle in front of the usual position. Master sensor units will be placed on the port side of

the net. A Marport head rope sensor will be deployed on all nets. We will rig the vessel transducer to receive the two Scanmar sensors and the Marport Sensor with a receiver and computer for each. We will also have the portable transducer available in case of difficulties. We will seek a trawling location in areas in Port Gardner or central Puget Sound that are commercial test fishing areas. Hours of operation can be either day or night-time.

For objectives 1 and 2, we will first deploy a 144 KHz Scanmar master and slave in the normal position to measure wing spread (Table 1 and Figure 1a). We will also deploy a 110 KHz Scanmar master and slave 1 m forward of the first sensor pair. During Haul 2, we will test the pairs of Scanmar sensors in a crossed design to see if the extra distance is detectable by the net mensuration equipment. During Haul 3, we will remove the aft Scanmar sensor and replace it with a Marport sensor pair and pair each system slave sensor in a paired configuration followed by the same sensors in a crossed design in Haul 4. During Haul 5, we will repeat Haul 4, if necessary, with greater separation between the senors. During Haul 6, we will use only the Marport slave set at the same frequency of the Scanmar sensor in order to see if the slave can service both master units without interference.

The six hauls will require setting and retrieving the net during a period of approximately 5 to 6 hours. Depending on the system performance and the digital results, we may have to change the order of the tests, rig the equipment differently, or solve other problems that arise.

Table 1. Planned Mensuration Sensor Configurations during Gear Trials.

Haul Number	Scanmar 110	Scanmar 144	Marport	Pattern	Comment
1	Forward 1 m	Normal Wing	No	Paired	Objective 1
2	Normal Wing	Forward 1 m	No	Crossed	Objective 2, slaves switched
3	No	Forward 1 m	Normal Wing	Paired	Objective 3
4	No	Forward 1 m	Normal Wing	Crossed	Objective 2, slaves switched
5	Repeat above	If needed with	Farther	Separation	Objective 4
6	No	Forward 1 m	Normal Wing	One slave	Objective 5, Marport slave only set at 110 kHz

Personnel:

Wayne Palsson	GAP	Lead Scientist
Paul von Szalay	GAP	Scientist
Gary McMurrin	RSST	Lead Technologist

Interactions:

The FOCI group is seeking to evaluate the performance of the Stauffer net and will benefit by using the two pairs of Scanmar sensors and receiver. They wish to examine the net spread and height of the midwater net which can be accomplished by using the dual frequency sensors on the wings and on the head and footrope.

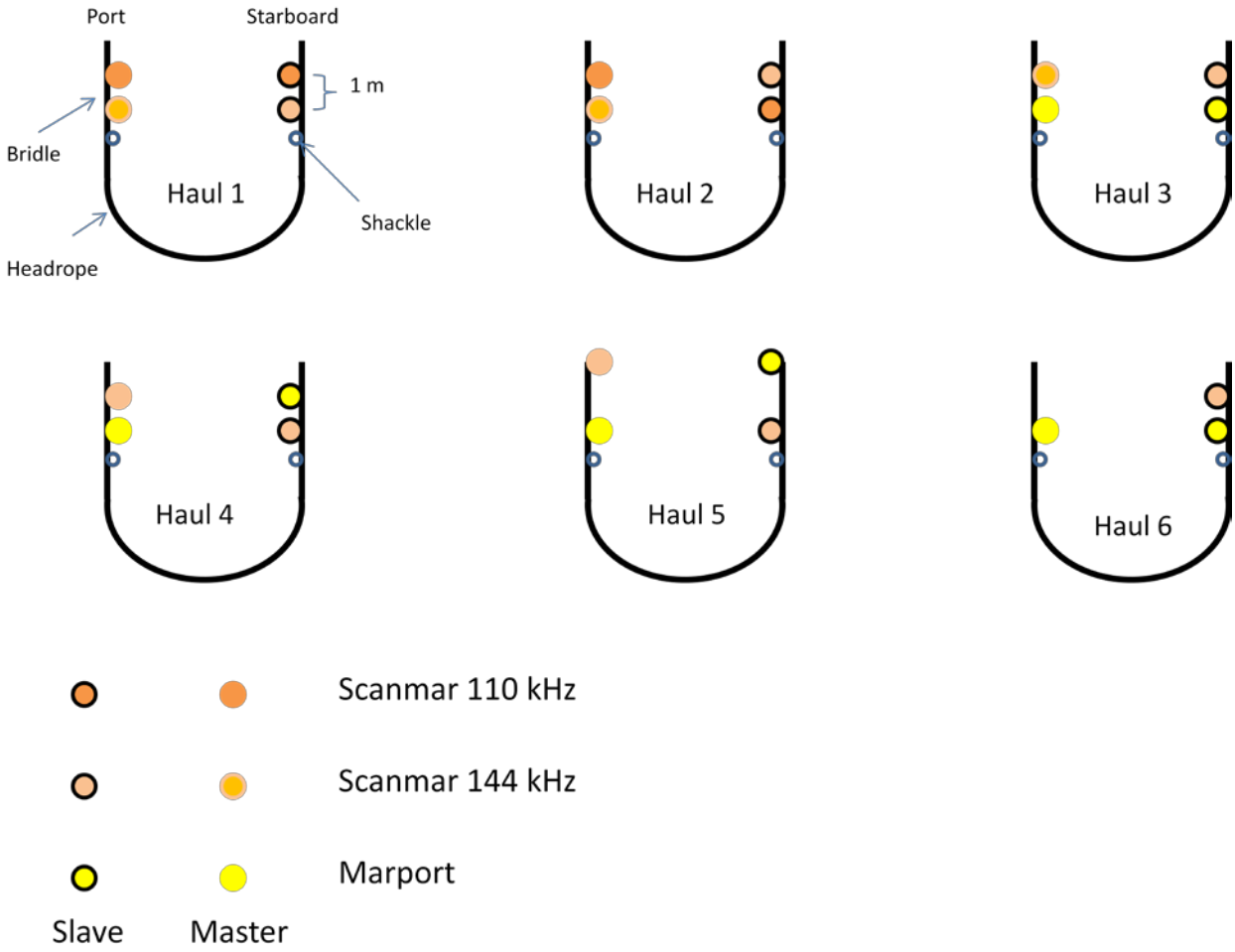

Figure 1. Sensor configuration schematic for Marport/Scanmar gear trials.

Appendix 3

GAP Gear Trial Study Plan, January 2013

The Groundfish Assessment Program of RACE is implementing the Marport net mensuration system for its Poly Noreastern (PNE) bottom trawl used in RACE research surveys aboard charter or NOAA research vessels. We will test calibration configurations for the Marport and the previously used Scanmar sensors. Two trawl sets are required to test and refine the rigging of both the Marport and Scanmar sensors on the same net. The master sensors of each unit will be affixed to the port side of the bridle, just forward of the shackle that attaches the bridle to the net. A distance of one meter will be used to separate the sensors on each side of the net. The slave sensors will be attached to the starboard side of the net in a similar manner. The net will be deployed on the bottom and towed for 15 minutes with the codend open while performance is monitored and recorded on computers in the wheelhouse. The distance between sensors will be adjusted during the second set if sensor readings are inconsistent during the first trial. If more time is available for additional sets, further adjustments or alternate sensor configurations will be applied to the net. The trials will be conducted in depths between 91 and 120 m in the commercial test areas designated by the Washington Department of Fish and Wildlife either in Port Gardner (within 2 miles of the entrance to Everett breakwater) or off the Shilshole Marina (north of a line from West and Skiff Points to a line between Point Monroe and Meadow Point in waters at least 50 fathoms). Tows will be conducted between 0800 and 1600. Required personnel are Wayne Palsson, Paul von Szalay, and Gary McMurrin.

Appendix 4

FOCI REQUEST: *CONDUCT SELECTED TOWS TO COMPARE PERFORMANCE OF STAUFFER TRAWL USING VARIABLE BRIDLE LENGTHS ON STAUFFER TRAWL FISHED WITH FISHBUSTER DOORS*

FOCI staff: Matt Wilson

We request ~3 hrs (minimum) during the January 2013 gear trials aboard the NOAA ship Oscar Dyson to measure the width and height of the Stauffer trawl mouth opening when fished with oversize doors using the standard 30-fm bridles compared with longer, 90-fm bridles. Ultimately, our goal is to be able to compare the fish catch efficiency and selectivity of the Stauffer and the Cantrawl nets at sea without changing doors, which is time consuming and can be dangerous. We normally fish the Stauffer trawl, which is used by FOCI to collect small midwater fishes, with 5'x7' (ca. 3 m^2), steel-v, 1250-lb (ca. 567 kg) doors. The Cantrawl net, which is used on the BASIS survey by the EMA program, is a much bigger trawl and so is fished with larger 5-m^2, steel-alloy, 613 kg doors (Murphy et al., 2003. NPAFC Doc. 677). Our expectation is that lengthening the Stauffer trawl bridles will compensate for the increased spread when fished with the 5-m^2 alloy doors and thereby provide a simple solution to comparing the nets at sea using the 5- m^2 alloy doors. During the gear trials, however, the alloy doors will not be available so we propose to conduct our measurements using the similar-size FishBuster doors that will be available from MACE.

As a first priority, we want to conduct two tows stepping the trawl at 3 depths, depending on bottom depth we expect the 3 depths to be something like 20, 40, and 60 m; however, if bottom depth allows for deeper depths, then we want to increase the middle and maximum depths. The trawl will be equipped with net mensuration equipment: Scanmar spread sensors, 3rd-wire headrope unit, and Marport depth/height sensor (door spread sensors may also be used). The only difference between the two tows is that the Stauffer trawl will be rigged with 30-fm bridles on one tow and 90-fm bridles on the other tow. For each tow, the trawl should be deployed per standard deployment procedures to the deepest depth, allowed to equilibrate, and then towed for up to 20 minutes at depth to ensure sufficient amount of high-quality net mensuration data is collected. The net will then be raised to the next shallower depth and so on. We request that the retrieval rate of the warp wire be 10 m/min, which is the retrieval rate we intend to use at sea during field work. Towing and speed (~2.5 kts) must be kept constant for both tows. If both tows occur one immediately after the other, then we request that tow direction be the same so as to control for direction of tidal current, but this is not crucial.

In an effort to conserve time, we propose that the first priority work be conducted on Jan 23, which is identified as a loading day, while the ship is en route to Port Susan.

As a second priority, we propose to conduct 2-4 more tows, identical to those described above, to allow for replication of data. One tow would be conducted with the 30 fm bridle and one with the 90 fm bridle. Anticipated time for second priority work = ~3-6 hours.

1) Load one Stauffer trawl onto one of Oscar Dyson's net reel equipped with either the 30-fm or the 90-fmbridles, whichever maximizes overall logistical efficiency.
    a. Equip the Stauffer trawl with two pair of Scanmar spread sensors. One pair to measure the distance from headrope center to footrope center. A second pair to measure the distance from wingtip to wingtip.
2) Equip trawl with 3rd wire headrope unit and marport depth/height sensor, and attach two small floats to the footrope to better ensure that the footrope will be visible in the marport output.
3) Deploy at normal deployment speed, but retrieve at a wire-in rate of 10 m/sec. Fish the Stauffer trawl over a stepped (60, 40, 20m) path from deepest to shallowest depth. Net to be fished with open cod end.
4) Allow net to equilibrate at depth and collect data for 10-20 minutes per target depth.
5) Remove Stauffer trawl from net reel during MACE sphere calibration on January 24.
6) Stauffer trawl to be offloaded on January 26 when PMEL mooring gear is loaded.