Application for an Exempted Fishery Permit:

Extension of the Southwest Fisheries Science Center (SWFSC)-Industry Collaborative "Proof of Concept Project" started in 2017 for Nearshore Surveillance in NW Coastal waters in conjunction with the SWFSC Acoustic Trawl Methodology Survey (ATM)

1. **Applicants must submit a completed application in writing that includes, but is not limited to, the following information:**

   a. Date of application.

      October 19, 2017

   b. Applicant's names, mailing addresses, and telephone numbers.

      - **West Coast Pelagic Conservation Group.**
      - **Mailing Address: PO Box 1104, Westport WA 98595-1104**
      - **Phones: 360-619-2019: 360-310-0662**

   c. A statement of the purpose and goals of the experiment for which an EFP is needed, including a general description of the arrangements for the disposition of all species harvested under the EFP.

      Provide supplementary data collection and additional sampling techniques for areas nearshore of the proposed 2018 NOAA/SWFSC acoustic-trawl survey. Sampling will be done at the same general time and nearshore areas as the NOAA survey EFP is needed because directed sardine fishing is closed. The coastal pelagic species (CPS) that will be retained in small amounts (e.g. 5kg to 25kg) for sampling will be dip-netted sardines, anchovies, and mackerel(s). The sample fish will be frozen and retained for identification and biological measurements to be performed by NOAA. Wrapped schools will then be released alive, and no fish will be harvested for commercial purposes.

   d. Valid justification explaining why issuance of an EFP is warranted.

      The EFP is warranted to provide information in addition to the NOAA ATM survey, by providing species composition and indications of distributions and abundance of CPS species in adjacent areas where the NOAA survey cannot sample. The industry vessel has been equipped with a Simrad EK-60 sonar that will acoustically sample the area nearshore of the NOAA ATM survey area in order to make relative comparisons with the areas surveyed by the NOAA vessel. This is an enhanced extension of the 2017 collaborative "proof of concept" endeavor that the SWFSC and the NW fishing industry did off the coast of Washington and Oregon (see attachment 1: 2017 Project Instructions from the SWFSC). This effort was a cooperative work utilizing the survey vessel *Reuben Lasker* and the seine fishing vessel *Lisa Marie.* Directed sardine fishing is presently closed. We have been advised by Council and NOAA staff that an EFP is appropriate to continue this project.

   e. A statement of whether the proposed experimental fishing has broader significance than the applicant's individual goals.

The experimental fishing could be applied to other species of fish that have nearshore components in other areas in U.S. or Canadian waters. The techniques could be applied anywhere that additional species composition sampling would benefit fisheries survey work.

f. A statement whether the applicant intends to continue the EFP activities for more than one year. NMFS issues EFPs for only one year at a time. However, if an EFP proposal has a multi-year focus, this information should be included in the proposal.

Yes, the applicants intend to continue more than one year.

g. Number of vessels and processors covered under the EFP, as well as vessel names, skipper names, and vessel ID and permit numbers.

One vessel: F/V Lisa Marie, Coast Guard #: 1038717. Skipper: Ricky Blair. Owner: Andy Blair. No processors will be involved in the handling of the samples unless it is to transfer samples to a location designated, and as directed, by the survey team. There will be no commercial purchase of fish in this project.

h. A description of the species to be harvested under the EFP and the amount(s) of such harvest necessary to conduct the experiment; this description should include estimates of harvest impacts to non-target species.

Species may include Pacific sardine, northern anchovy, jack mackerel, and Pacific mackerel. Estimated need is a maximum of 10 metric tons for all species

i. A reasonable justification for the amount of EFP fish to be harvested. For statistical purposes, this could include a power analysis or other means to estimate a reasonable amount or number of fish. Any other justification that supports the amount of fish proposed for EFP activities should also be included.

Small amounts of EFP fish are to be retained for species composition and frozen for additional biological sampling (length frequency distributions, etc.). Total amounts will be determined by the number of schools that can be sampled during the survey period.

j. A description of a mechanism, such as at-sea or dockside fishery monitoring, to ensure that the harvest or impact limits for targeted and incidental species are not exceeded, and are accurately accounted for and reported.

Monitoring of sampling efforts will be in conjunction with the NOAA ATM survey team that will be sampling adjacent areas offshore of the proposed survey area. There may be a NOAA observer on board the seine vessel when sampling occurs or at other appropriate times as there was in 2017. In addition the participants do not intend to harvest any fish in commercial quantities when working in conjunction with the survey vessel.

k. A description of the proposed data collection methods, including procedures to ensure and evaluate data quality during the experiment, and data analysis methodology and timeline of stages through completion.

See Attachment 1 (2017 Project Instructions from the SWFSC).) for data collection methods and procedures to evaluate data quality.

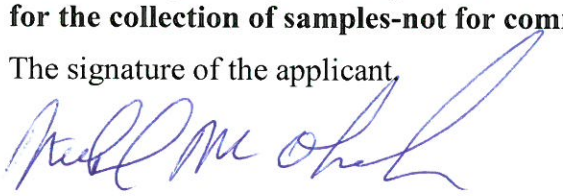
l. A description of how vessels will be chosen to participate in the EFP.

The Lisa Marie was chosen based on dialogue with the NOAA survey team about the type and size of vessel, availability, and a history of conducting research. The vessel selection was supported by members of West Coast Pelagic Conservation Group.

m. For each vessel covered by the EFP, the approximate time(s) and place(s) fishing will occur, and the type, size, and amount of gear to be used.

The time and place will be scheduled to be in conjunction with the NOAA survey activities, most likely in a 25 day to 30 day window in a timeframe between June 25th and August 31. Exact time and dates will be dependent on the survey vessel schedule. Again any "fishing" will be under the direction of the survey team and for the collection of samples-not for commercial enterprise.

n. The signature of the applicant.



Michael M. Okoniewski

Board Member

West Coast Pelagic Conservation Group

Appendix 1

Project Instructions

Date Submitted: 5 June 2017

Platform: Fishing Vessel *Lisa Marie*

Project Title: SWFSC-Industry Collaborative, Summer 2017 Nearshore Survey

Project Dates: 5-10 days during ~1-13 July 2017

Prepared by: _____ Dated:
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Approved by: _____ Dated:
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Representative West Coast Pelagic

Approved by: _____ Dated:
Gerard DiNardo, Ph.D.
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Kristen Koch
Science and Research Director (Acting)
SWFSC

F/V *Lisa Marie*

Contents

1 Overview

During June 19-August 11, 2017. NOAA FSV *Reuben Lasker* will be used by SWFSC FRD to survey the distributions and abundances of coastal pelagic fish species (CPS), their prey, and their biotic and abiotic environments in the California Current between San Diego, California and the northern extent of Vancouver Island, Canada (RL-17-04). Historically, Lasker has only surveyed in water depths greater than ~ 50 m and consequently does not sample the nearshore area, potentially under sampling any nearshore CPS aggregations. The aim of this collaborative research is to quantify this potential sampling bias by using an industry fishing vessel, *Lisa Marie,* to extend the sampling closer to shore.

The principle components of the nearshore sampling include: AST's Simrad EK60 General Purpose Transceiver (GPT) connected to *Lisa Marie's* Simrad 38 kHz transducer (ES38-B); AST's video logging electronics connected to *Lisa Marie's* Furuno 250 sonar display; and industry's processing of *Lisa Marie's* purse seine catches. During the week of 19 June, an AST member (Josiah Renfree) will work with J&G Marine Supply to install and test the EK60 and video recording systems. JR will calibrate the EK60 system so the data may be used to estimate CPS biomass in a nearshore sampling stratum. The sonar imagery will be used to qualitatively evaluate the numbers, sizes, and behaviors of CPS aggregations.

When *Lasker* is sampling near Westport, Washington (estimated between 1 and 9 July), two industry observers (Andrew Blair and Greg Shaughnessy) will embark *Lasker* from *Lisa Marie.* Meanwhile, for 5 to 10 days, when *Lasker* is surveying off Washington and Oregon, *Lisa Marie* will conduct complementary echosounder (Simrad EK60), sonar (Furuno 250), and purse-seine sampling along nearshore extensions of *Lasker's* survey transects. During this period, an AST member (Scott Mau) will be aboard *Lisa Marie* to log data, advise on the sampling protocol, and maintain a log of sampling activities, and species proportions and lengths in the catches.

Industry may also sample concomitantly with an aircraft-based camera, as during summer 2015 and 2016. If the aerial-photographic sampling is done, the acoustician aboard *Lasker* (Steve Sessions) and Captain Ricky Blair aboard *Lisa Marie* will coordinate with the fishing industry's pilot to assure that the nearshore transects are sampled from the various platforms as close in time as possible.

2 Sampling Protocol

Lisa Marie is expected to begin sampling the nearshore strip of the Washington Coast 5 miles north of *Lasker's* transect 101 (Latitude 47.678° N; Fig. 1) and continue as far south as times allows. The east-west transect are approximately 6.5 miles long to allow sampling of 3 transects per day during about 5 hours. Acoustic sampling of each east-west transect is expected to occur on a straight line between the inshore and offshore waypoints (Table 1). Deviations from these transect lines should be minimized. Each day, after the transects have been surveyed, *Lisa Marie* will fish to sample fish species and sizes.

Conditions permitting, *Lisa Marie* and *Lasker* will rendezvous daily to exchange information and maintain temporal and spatial coherence of the samples. If daily encounters are not possible, or if a large temporal mismatch between *Lisa Marie* and *Lasker* occurs, *Lisa Marie* will continue the sampling protocol independently of *Lasker,* at a rate of 3 to 4 transects per day for the remaining available time.

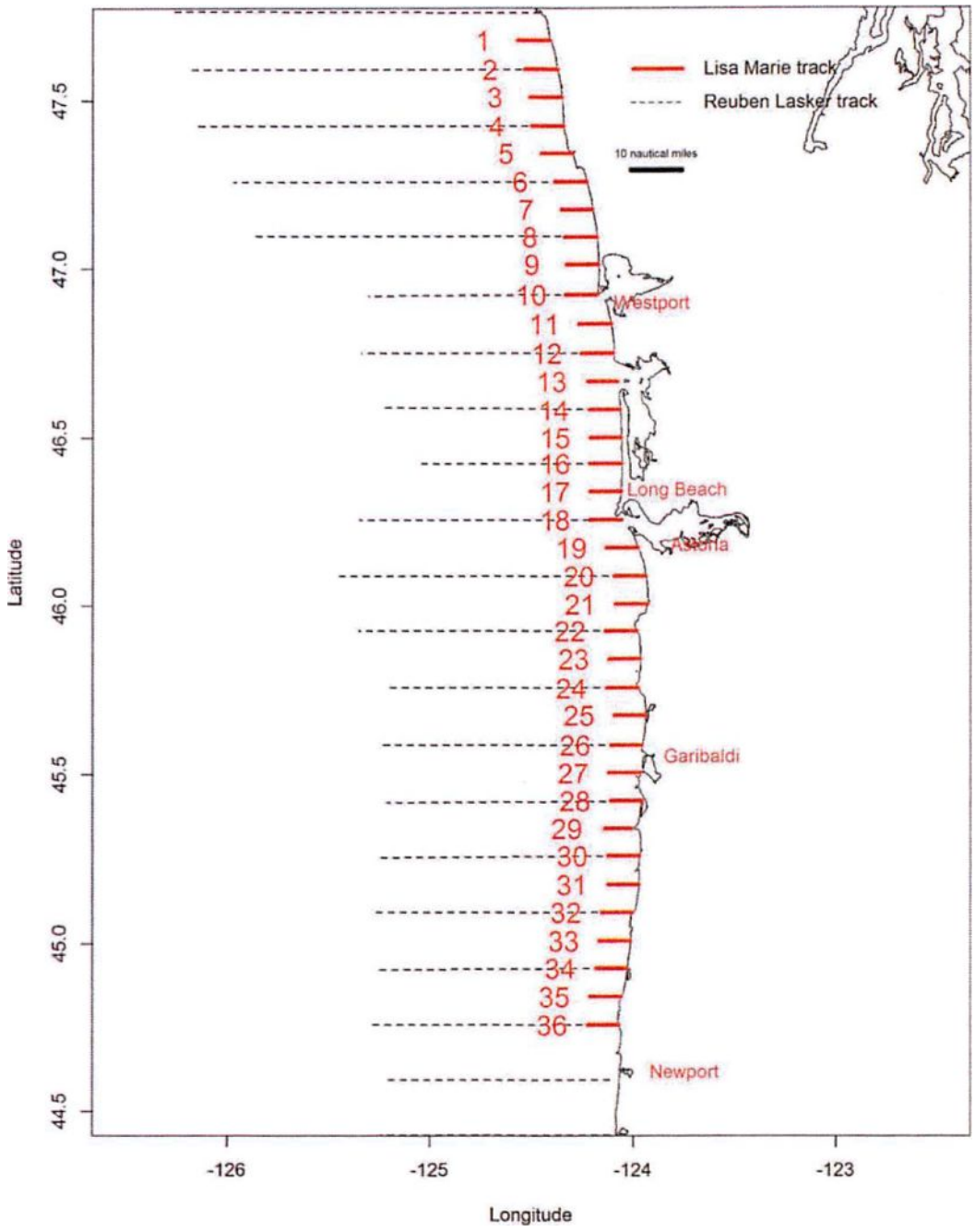


Figure 1. Nearshore survey transects to be sampled by *Lisa Marie* (red thick lines) overlaid on *Lasker's* compulsory lines (black thin dashed lines). Note, *Lisa Marie* will run the nearshore transects to the east, as close to shore as safely navigable.

Table 1. Waypoints for *Lisa Marie's* proposed track lines in Fig. 1. Note, the inshore waypoints are nominal, and *Lisa Marie* will continue transects as close to shore as safely navigable.

Transect	Waypoint	Longitude (° W)	Latitude (° N)
1	inshore	-124.408	47.67865
1	offshore	-124.569	47.67865
2	inshore	-124.372	47.59303
2	offshore	-124.534	47.59303
3	inshore	-124.35	47.51007
3	offshore	-124.509	47.51007
4	inshore	-124.34	47.42475
4	offshore	-124.501	47.42475
5	inshore	-124.298	47.34211
5	offshore	-124.453	47.34211
6	inshore	-124.227	47.25872
6	offshore	-124.387	47.25872
7	inshore	-124.198	47.1762
7	offshore	-124.354	47.1762
8	inshore	-124.178	47.09451
8	offshore	-124.337	47.09451
9	inshore	-124.171	47.01194
9	offshore	-124.328	47.01194
10	inshore	-124.174	46.92323
10	offshore	-124.333	46.92323
11	inshore	-124.109	46.83707
11	offshore	-124.267	46.83707
12	inshore	-124.097	46.75073
12	offshore	-124.255	46.75073
13	inshore	-124.078	46.66776
13	offshore	-124.223	46.66776
14	inshore	-124.064	46.5832
14	offshore	-124.215	46.5832
15	inshore	-124.059	46.50017
15	offshore	-124.212	46.50017
16	inshore	-124.057	46.42188
16	offshore	-124.213	46.42188
17	inshore	-124.059	46.33892
17	offshore	-124.211	46.33892
18	inshore	-124.056	46.25472
18	offshore	-124.212	46.25472
19	inshore	-123.977	46.17179
19	offshore	-124.132	46.17179
20	inshore	-123.938	46.08754
20	offshore	-124.093	46.08754
21	inshore	-123.93	46.005

21	offshore	-124.087	46.005
22	inshore	-123.981	45.92587
22	offshore	-124.137	45.92587
23	inshore	-123.965	45.84418
23	offshore	-124.118	45.84418
24	inshore	-123.975	45.75824
24	offshore	-124.129	45.75824
25	inshore	-123.94	45.67655
25	offshore	-124.091	45.67655
26	inshore	-123.958	45.5889
26	offshore	-124.109	45.5889
27	inshore	-123.965	45.50541
27	offshore	-124.12	45.50541
28	inshore	-123.958	45.42117
28	offshore	-124.109	45.42117
29	inshore	-124.01	45.33863
29	offshore	-124.138	45.33863
30	inshore	-123.969	45.25779
30	offshore	-124.123	45.25779
31	inshore	-123.972	45.17355
31	offshore	-124.123	45.17355
32	inshore	-124.002	45.09101
32	offshore	-124.155	45.09101
33	inshore	-124.013	45.00847
33	offshore	-124.165	45.00847
34	inshore	-124.03	44.92763
34	offshore	-124.182	44.92763
35	inshore	-124.058	44.84371
35	offshore	-124.211	44.84371
36	inshore	-124.07	44.76032
36	offshore	-124.222	44.76032

At the conclusion of the collaborative nearshore sampling (estimated 13 July 2017), the two industry observers (AB and GS) will disembark *Lasker* to *Lisa Marie.* At the conclusion of the nearshore survey aboard *Lisa Marie,* SM will be put ashore at Westport, WA.

3 EK60 System

The EK60 system is comprised of a 38-kHz GPT, a split-beam transducer, AC or DC power, a connection to the ship's ground, synchronization with other sounders and sonars, and an Ethernet connection to a laptop PC running Simrad ER60 control and data logging software. In this installation, the temperature sensor, event input, motion sensor, new line, and remote on/off inputs (see **Fig. 2)** will not be used.

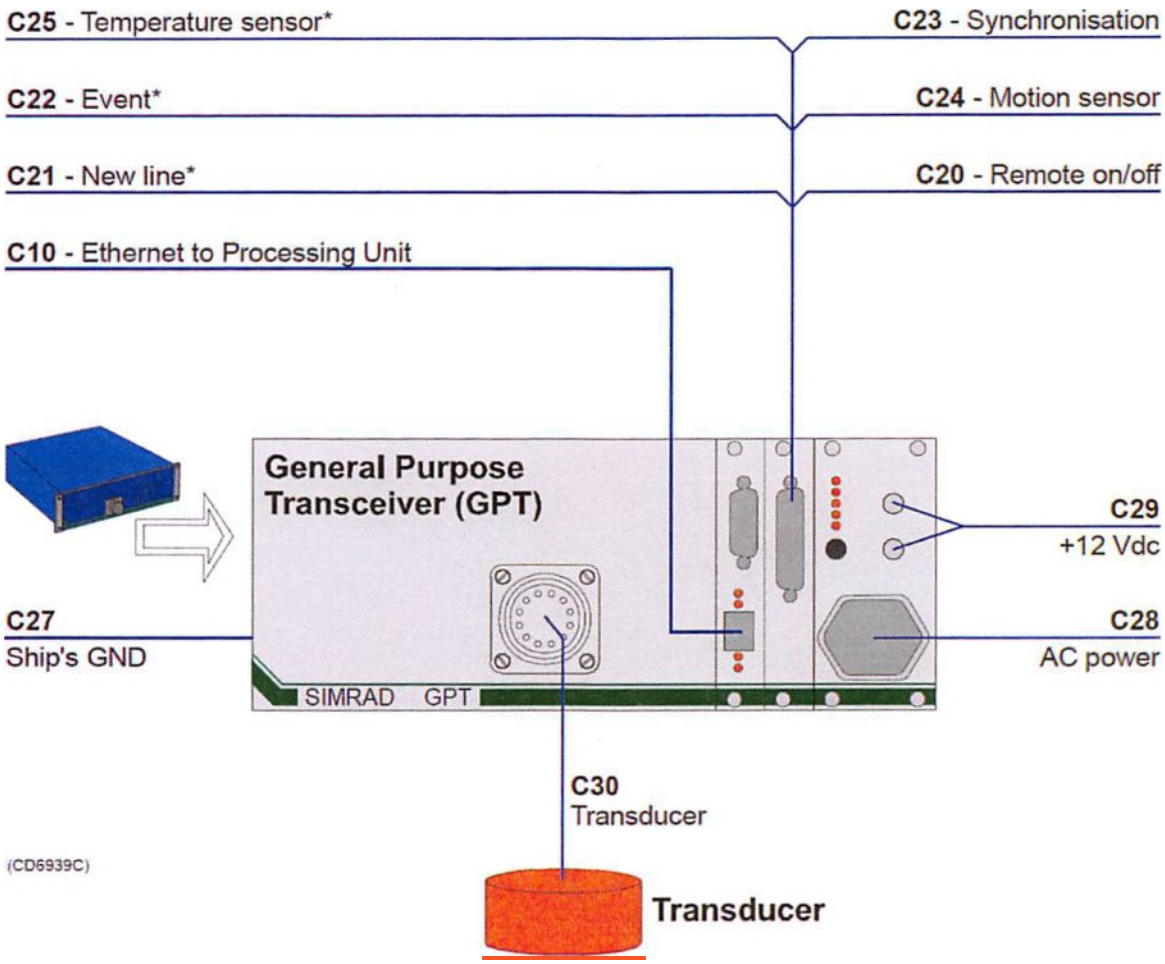


Figure 2. Diagram of connections to the Simrad General Purpose Transceiver (GPT), notably including: TrigOut from the auxiliary port (C23), AC power (C28), grounding (C27), ES38-B transducer (C30), and Ethernet to a laptop running Simrad ER60 software (CIO).

3.1Transducer

The ES38-B transducer, mounted in the hull of *Lisa Marie,* is connected, via a terminal strip in a junction box on the bridge, to the GPT using an 11-pin Amphenol connector **(Fig. 3).**

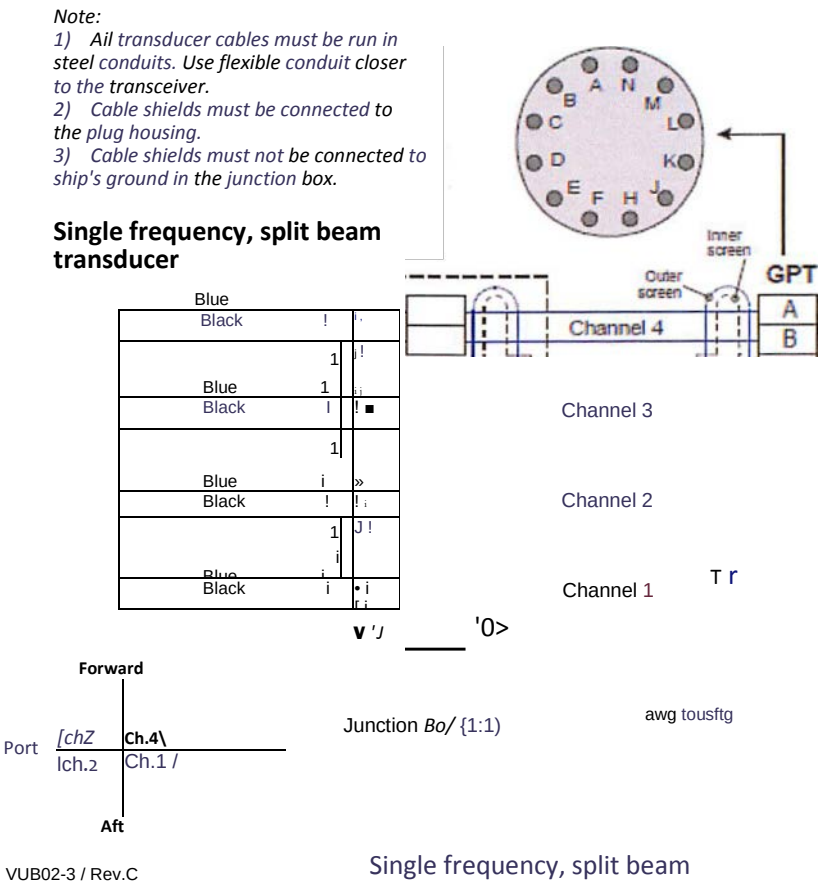


Figure 3. Wiring diagram for the Amphenol connector used to connect the ES38-B transducer to the EK60 GPT. Note, the polarity is important for split-beam function; and the cable shields must not be connected to the ship's ground in the junction box.

3.2 Power

The GPT may be powered by either 110 AC or 12 VDC/7A. To reduce noise in the echosounder data, use a power strip with line filter.

3.3 Ground

The GPT chassis must be connected to the ship's ground using a cable that is as short as possible.

3.4 Synchronization

To mitigate "cross-talk" noise in the EK60 data, the EK60 ouputs a "master" trigger pulse that should be used to synchronize the transmissions from sonars and other sounders. The TrigOut signal from the GPT Auxiliary connector is available with either positive or negative triggering **(Fig. 4).** The TrigOut+ signal is an open collector output (max 100 mA) containing a 100-kOhm pull-up resistor to +5 VDC. This signal is normally low. The TrigOut+ signal goes high when the GPT is ready to transmit, and it goes low again when the GPT has finished transmitting. TrigOut- is the inverse of TrigOut+. Connect the ground wire to one of the Ground pins (18-22).

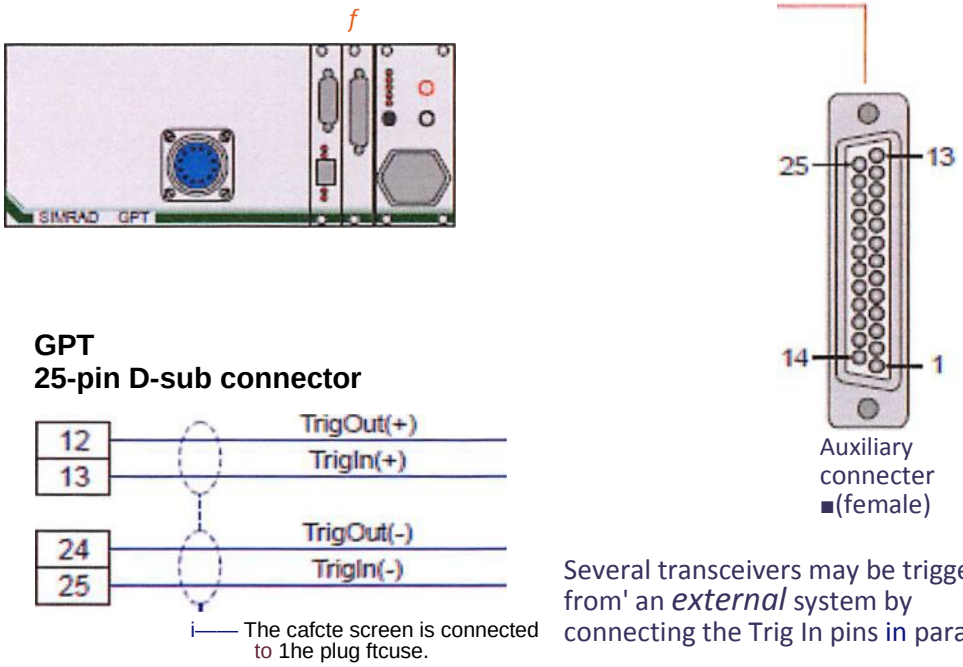


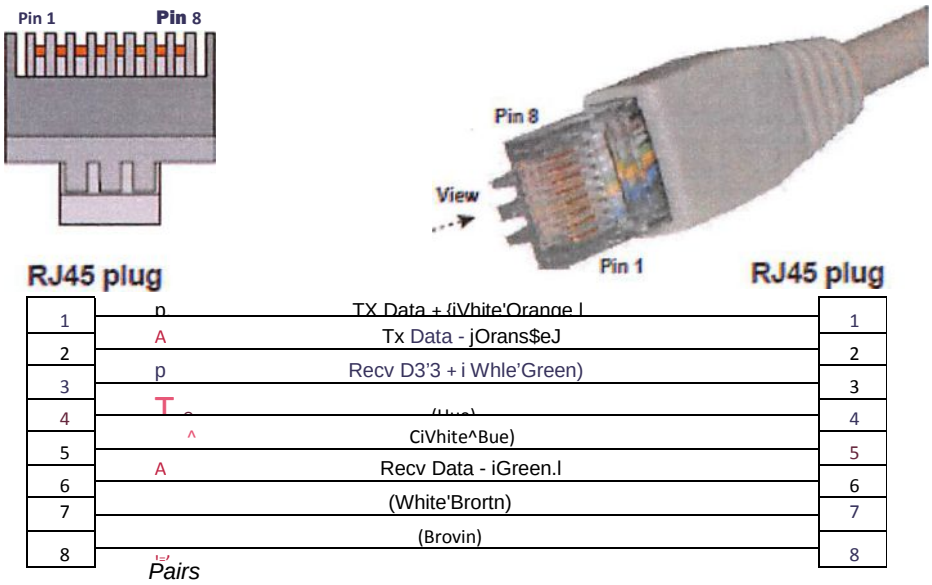
Figure 4. The Auxiliary port on the EK60 GPT provides TrigOut signals that should be used to synchronize the transmit pulses from all echosounders and sonars. This trigger signal is available with either positive (TrigOut+) or negative (TrigOut-) triggering.

3.5 ER60 Computer

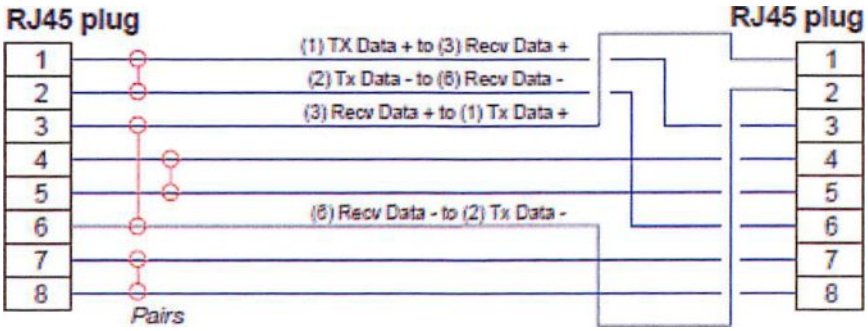
The EK60 will be controlled, and its data will be logged, using a laptop PC running Simrad ER60 software. Data will be backed-up to USB hard disk drives (HDDs).

3.6 Ethernet

The Ethernet cable which connects the GPT and the laptop may be direct, using a "crossover cable", or via an Ethernet switch, using two "straight through" Ethernet cables **(Fig. 5).**



Ethernet 10Base-T "Straight Through



Ethernet 10Base-T Crossover

MOTE; In order so prevent noise and crossover. you are strongly **adviced** to ise the cable pairs indicated above.

The "crossover' **cable** is used so cascade HU3s, or **fc«T** cm **netting** mo **Ethernet** stations or corrpicers back-to-back without a HUB)

W4D0 / Rev E

Ethernet 10Base-T with RJ45 plugs

Figure 5. The GPT and laptop are connected by Ethernet, either directly using a "crossover" cable, or via a switch using "straight through" cables.

3.7GPS Data

NMEA 0183 data from a GPS receiver must be input to the laptop via a USB-serial adapter. The communication parameters are 4800 bps, 8 data bits, no parity, and one stop bit. The GPS's serial output signal (Tx, pin 3) and ground (pin 5) wires must be connected to the laptop's serial input signal (Rx, pin 2) and ground (pin 5) wires using a maximum cable length of 10 m (Fig. 6).

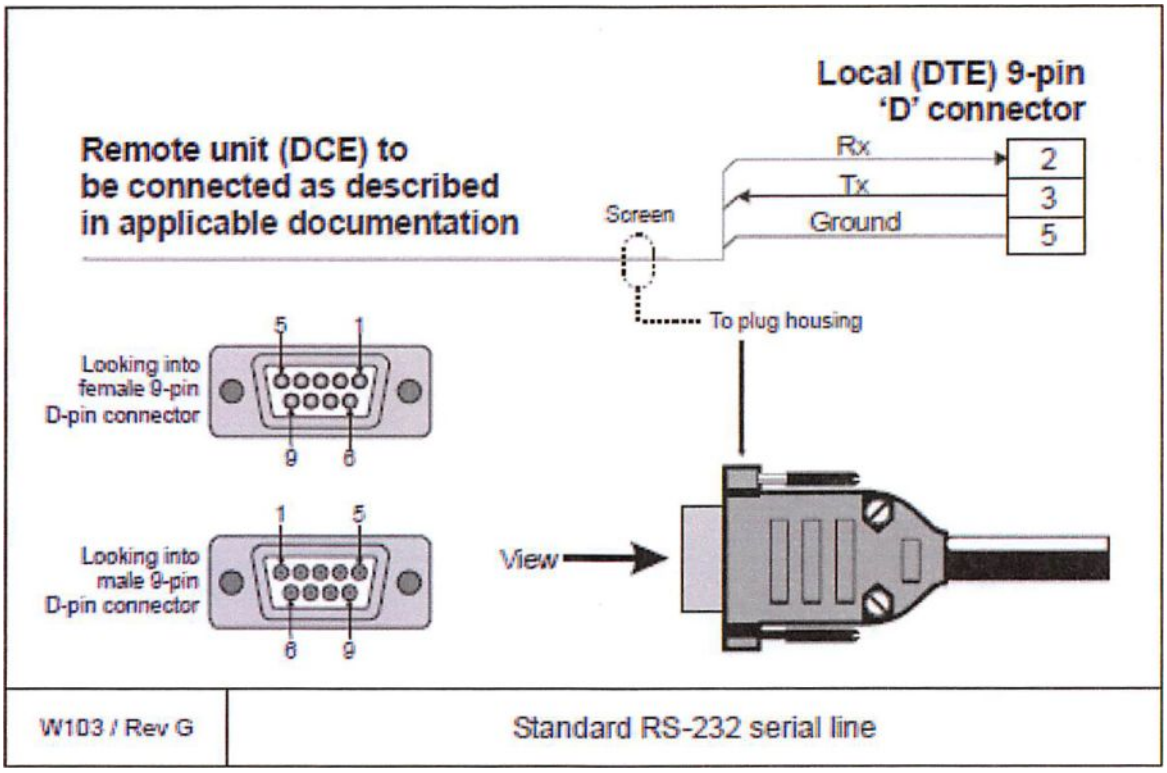


Figure 6. The GPS's transmit signal (NEMA 0183 format) is input to the laptop PC on pins 3 (Tx) and 5 (ground) of a DB-9 connector.

4 EK60 Calibration

The echoes received by the EK60 system must be calibrated relative to a sphere made from tungsten carbide with 6% cobalt binder material, suspended directly beneath the transducer, at a range of more than 20 feet, using two or three lengths of fishing line **(Fig. 7).** The lines may be controlled manually. This procedure requires two people on deck and one on the bridge observing the ER60 display.

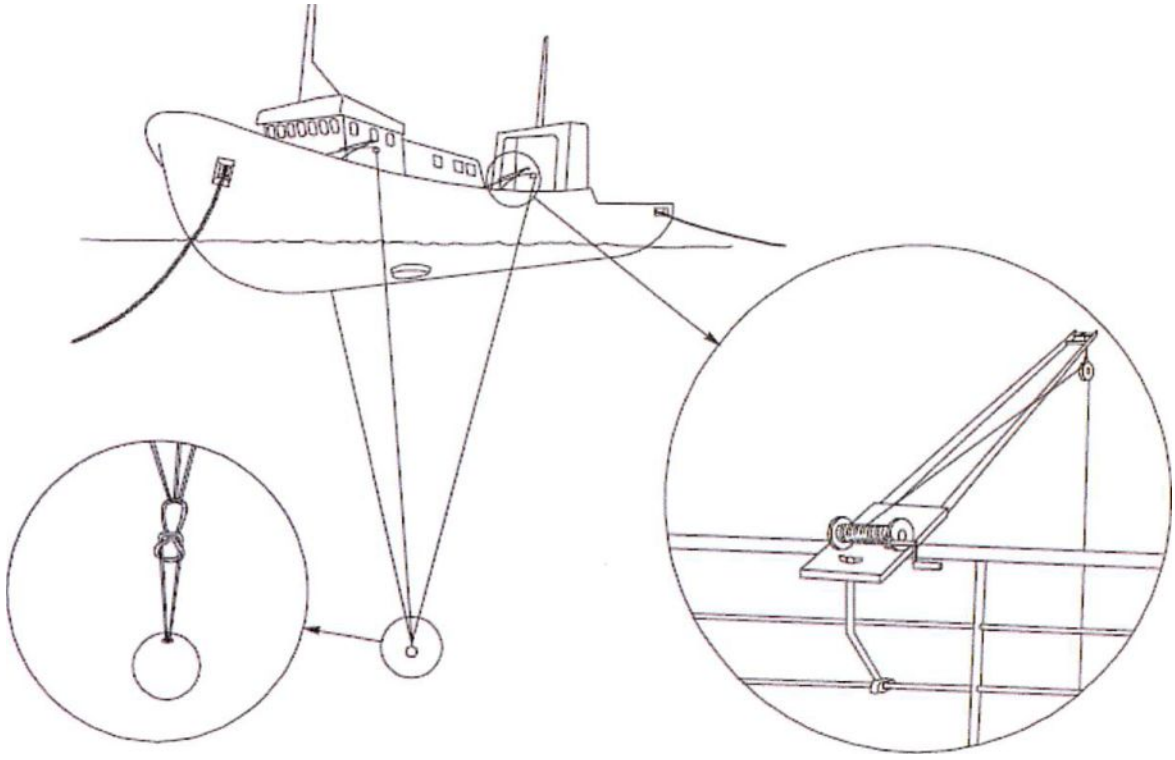


Figure 7. The EK60 system is calibrated by suspending a metal sphere directly beneath the transducer at a range of more than 20 feet. The sphere is tethered using two or three monofilament lines. It is positioned by manually adjusting the line positions and lengths.

5 Sonar System

The Furuno 250 sonar aboard *Lisa Marie* will be used to observe near-surface fish schools

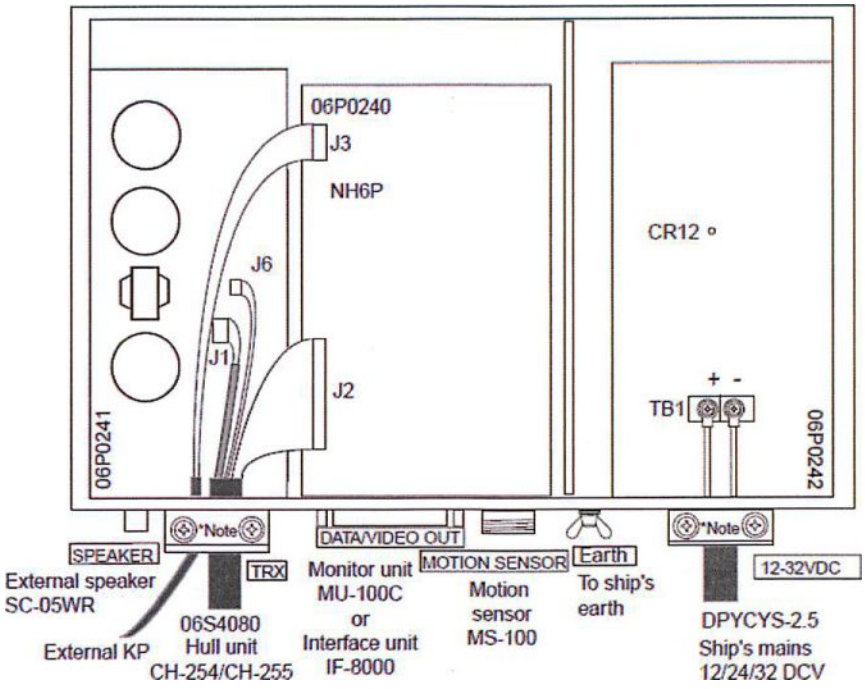
5.1 Display logging

The analog (VGA) display signal from the Furuno 250 sonar aboard *Lisa Marie* will be split, converted to digital (HDMI), and then logged to HDD with a video recorder. The sonar display includes geographic position. If the display recording does not include time, it shall be derived by cross-referencing the position information in the EK60 data. For sonar specifications and a block diagram of an installation, see http://www.furunousa.com/ProductDocuments/CH250%20Brochure.pdf . The recording devices will be located, with the GPT and laptop, on the bridge of *Lisa Marie* **(Fig. 8)**

Figure 8. Table on the bridge of Lisa Marie (left) where the EK60 GPT, laptop, and sonar- display recording equipment will be located. The table is located to the port side of the helm station, behind the array of instrumentation and monitors (right).

5.2 Synchronization

To synchronize transmissions of the CH-250 with the EK60, connect the GPT TrigOut to pin 3 on transceiver connector J3 / 06P0240 **(Fig. 9).**



NH6P (local supply)

Transceiver unit

Vinyl wire (loca' supply)
.AWG22-26

Sonar. E/S

06P0240 J3
KPI > 3 >
EXT_SW > 5 >-
GND> 6 >-

. KP OUT +5V
to 15V GND

3 to I5V
possitive

(TRXjclomp

Figure 9. To trigger the Furuno 250 sonar from the EK60, connect the TrigOut signal (+ pin 12, - or pin 24) from the auxiliary port to pin 3 on the J3 connector. Connect EK60 ground (pins 18-22) to J3 pin 6.

Press the sonar MENU key to display the User Menu. Select COM1 at the top of the MENU display. Press the down arrow to select TX RATE. Press the left arrow to display the setting window. Press the left arrow to select EXTERNAL. Press the MENU key to close the User Menu.

6 Contact List

Last Name	First Name	Affiliation	Phone	Email
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7 Equipment List

Equipment/Supply	Quantity	Responsibility
EK60 GPT (with AC power cable)	1	AST
Line-conditioning power strip	2	AST
GPT ground cable	1	J&G Marine Supply
GPT 110V AC power source	1	J&G Marine Supply
ES38-B Transducer	1	F/V *Lisa Marie*
ES38-B Factory Calibration Sheet	1	J&G Marine Supply
Transducer cable and Amphenol connector (6')	1	AST
ER60 Laptop PC (and spare)	2	AST
USB-Serial adapter (and spare)	2	AST
2-TB USB HDDs (and spare)	2	AST
Handheld GPS receiver, antennae, PS (backup)	2	AST
Male DB-9 serial plug (and spare) for GPS input	2	AST
Male DB-25 serial plug (and spare) for auxiliary	2	AST
"Crossover" Ethernet cable (and spare)	2	AST
"Straight through" Ethernet cables (backup)	2	AST
Four-port Ethernet switch and PS (backup)	1	AST
Surge suppressor/line filter power strip (and spare)	2	AST
Extension cord (and spare)	2	AST
Furuno 250 sonar	1	F/V *Lisa Marie*
Synchronize *Lisa Marie's* sounders and sonar from GPT Auxiliary	1	J&G Marine Supply
VGA splitter	1	J&G Marine Supply
VGA-HDMI converter https://www.bhphotovideo.com/c/search?Ntt=COCCNVGA2HD&N=0&lnitialSearch=yes&sts=ma&Top+Nav-Search=	1	AST
HDMI recorder https://www.blackmagicdesign.com/products/h264prorecorder or https://www.bhphotovideo.com/c/product/1033457-REG/atomos_atomnja004_ninja_blade_5_hdmi.html	1	AST
6' HDMI cable	1	AST
38.1-mm diameter WC (6% Co) sphere (and spare)	2	AST
Reel, ~20 lb test monofilament line	1	AST
Handheld VHF radios and charger	3	AST