HAUL LOG 12/20/2005

The following is data documentation for haul log records collected by the Pelagic Observer Program (POP) of the Southeast Fisheries Science Center (SEFSC) for the U.S. pelagic longline fleet. The data also includes records collected by the Northeast Fisheries Science Center (NEFSC) as part of their sea sampling program; in 1999 data collected by the NEFSC on board U.S. pelagic longline vessels were added to the POP database by incorporating the data fields that were common to both databases. At that time efforts were made to ensure that the information was collected in a consistent manner; however the user should understand that this documentation is based on POP protocols, standards, training, and institutional memory, which may vary somewhat from those of the NEFSC. NEFSC data represents about 11% of the trips observed.

Below, each data field is explained in detail sufficient for most user's needs. Additional information on the POP; including observer training materials, technical memoranda, and POP staff contact information, can be found on the POP website at www.sefsc.noaa.gov/pop.jsp

Notes on Terminology

The following data fields refer to gear deployment/retrieval information collected by the observers on the HAUL LOG form. When a pelagic longline vessel deploys fishing gear into the water, this is referred to as "setting" the gear, when retrieving the gear back onto the vessel it is referred to as "hauling" the gear. The time between setting and hauling is referred to as "soaking". Often the terms "set" and "haul" are used interchangeably to describe a single unit of fishing effort. Most commonly in the US pelagic longline fishery a single set, soak, and haul occur in a 24 hour period. Although sets and hauls are closely associated, due to POP definitions it is possible to have multiple hauls associated with a single set. See HAUL_NUMBER field below.

DATA FIELDS:

TRIP_NUMBER

This is 3-6 character field that identifies a single observed trip. "Observed trips" are defined as an observer spending time at sea on the vessel, regardless of whether or not the vessel conducted any fishing operations. For example, if a vessel departs the dock, and returns after 2 days due to a hydraulic failure without ever deploying fishing gear, and due to logistical considerations the observer does not re-embark on the vessel after the repairs are made, this is still considered a "trip" and is assigned a trip number. However, trips with no fishing activity do not appear in the database. This explains skips in otherwise consecutive trip numbers (e.g. ..M14, M15, M17…).

TRIP_NUMBER (sometimes referred to as trip ID number)is used to relate all records collected during a single trip together. It is found on all observer logs and forms. Trip numbers for SEFSC observers were originally 3 characters long and constructed by assigning an alphabetic letter to an individual observer who would then use that letter plus the sequential two digit number trip to create the trip ID number (e.g. P01, P02, P03…..etc.). By 2000 there had been sufficient turnover of observers that all letters of the alphabet had been assigned; therefore a 6-character TRIP_NUMBER was implemented. Observers already in the system kept their alphabetic identifier, but added a numeric portion (e.g. "P" became "P01") and the sequential trip number was increased to three characters (e.g. …P50, P51, P01052, P01053,….). Where alphabetic letters were reused, distinctions between different observers were made by the numeric portion of the observer identifier (e.g. D03001 and D04001 were two separate trip made by two separate observers).

NEFSC trip ID numbers followed a different system and sorting trips by individual observers cannot be done. NEFSC trips can be identified as those trips where the TRIP_NUMBER is greater than three characters long, during the time period 1992-1999. In 2000 trips A25006, B49004, B56038, and B48023 were conducted by NEFSC observers. After 2000, no trips were conducted by NEFSC observers.

LANDING_DATE

LANDING_DATE is the month, day, and year that the vessel returned to the dock. It may not be the same day the fish were actually sold. For example, if a vessel returns to the dock at 2000 hrs on 01/15/2003 and unloads the next morning at 0700 hrs on 01/16/2003, the LANDING_DATE is 01/15/2003. This can cause some confusion when trying to link observed trips to reported logbook and landings information because fishermen and dealers frequently consider landing date as the date the vessel was unloaded.

HAUL_NUMBER

This allows identification of each individual retrieval of the gear during a trip. Hauls are numbered sequentially starting at 1 for each trip. Catch (animal log information) is related back to effort (haul log information) through this field.

Note that occasionally for a single set of gear there will be multiple hauls. The POP terms these situations as "split hauls" and defines them as when a single gear deployment is retrieved in two or more different pieces, for one of the following reasons: 1) as the gear is retrieved, the captain sees the catch rate is very low and so decides to cut off the gear intentionally to allow for extra soak time. In this case the part of the gear hauled first could, for example, be designated as HAUL_NUMBER = 1 and the portion of the gear allow to soak for a longer period would be HAUL_NUMBER = 2. The other situation where a split haul occurs is if a break (also referred to as a "part off") in the line results in more than 6 hours being spent in searching for the remaining portion of the gear (or if a mechanical problem in the middle of the haul results in a 6 hour or more disruption in the haul). For this reason reports produced from this data set may have slightly conflicting effort numbers, depending if the user regarded "sets" or "hauls" as the unit of effort. Because the additional soak time implicit in the second part of a split haul may have some effect on the catch (including catch rate, live/dead status of the catch, etc.) the POP prefers to regard split hauls as separate units of effort. However, many users prefer to combine this effort into a single set for simplicity.

GEAR_CODE

Indicates the three digit TIP (Trip Interview Program) code for the gear used during this haul.

675 = Pelagic (surface) longline
676 = Bottom longline longline

Currently all haul records in the POP data are pelagic longline.

WAS_HAUL_OBSERVED

This field indicates whether the complete haul was monitored by the observer. NO = 0, YES = 1. An observed haul is defined as one where all of the catch brought to boatside during the haul is recorded. Unobserved hauls may occur if the observer in unable to view the catch due to injury, illness, or dangerous deck conditions. Although this data field is included in the database, in general when an observer indicates WAS_HAUL_OBSERVED = 0, the set/haul and any catch information from an unobserved haul is NOT entered into the database.

WAS_CATCH

Indicate whether or not this haul resulted in the observed capture of any animals. NO = 0, YES = 1. Hauls were no catch was observed (WAS_CATCH = 0) are commonly referred to as "water hauls" and are extremely rare.

WAS_INCIDENTAL_TAKE

Indicates if there was an incidental take (defined as the capture of a sea turtle, sea bird, or marine mammal) during this haul. NO = 0, YES = 1.

WEATHER_DESCRIPTION

This field describes the weather at the **beginning** of the haul, according to the following two digit codes:

01 = Clear

02 = Partly cloudy
03 = Continuous layer of clouds
04 = Drizzle
05 = Continuous rain
06 = Intermittent rain/showers
07 = Thunderstorms with lightning
08 = Rain with fog
09 = Fog or thick haze
10 = Snow or rain and snow mixed
11 = Blowing snow
99 = Other

If the WEATHER_DESCRIPTION = 99 (other) there should be a remark in the COMMENTS field. Also, this field is used to describe weather at the beginning of the haul; if the weather changes significantly during a haul there may also be remarks in the COMMENTS field.

WIND_SPEED

Indicates the wind speed, in whole knots, at the **beginning** of the haul. Most vessels do not have anemometers, observers generally estimate this value based on their own experience or by converting Beaufort sea state to wind speed. This field is used to describe wind speed at the beginning of the haul; if wind speed changes significantly during a haul there may also be remarks in the COMMENTS field.

WIND_DIRECTION

Indicates the direction, in compass degrees, of the wind at the **beginning** of the haul. If the wind is light or the direction is difficult to determine, the observer will record either "VAR" for variable wind or the field will be left null for undetermined. If wind direction changed significantly during a haul there may also be remarks in the COMMENTS field.

WAVE_HEIGHT

This field indicates the **maximum** observed height of the waves, in whole feet, at the beginning of the haul. If the wave height observed was less than 6 inches,

WAVE_HEIGHT = 0. If wave height changed significantly during a haul there may also be remarks in the COMMENTS field.

REVERSE_HAUL

Indicates if this haul was a reverse haul or not, NO = 0, YES = 1. A reverse haul is defined as one where the last hook set is the first hook hauled. Reverse hauls are the more common direction of haulback in the pelagic longline fishery. This field may be important when using SOAK_DURATION (see below) as a factor in analyses; when considering two hauls, each with the same set, soak, and haul durations but one a reverse haul and the other not, in theory a non-reverse haul will have a greater "effective" soak time (average soak time of all hooks will be slightly more than for a reverse haul).

This information was not collected during trips previous to Quarter 2, 2002. Hauls prior to this period will have a null value in this field.

GEAR_CONDITION

This field indicates the condition of the gear during the haulback according to the following two digit codes:

60 = No gear damage with greater than 10% hooks lost
61 = No gear damage with less than or equal to 10 % hooks lost
62 = Less than or equal to 50 % fouled gear due to weather/oceanic conditions. Gear tangled, spun up, or otherwise lowered gear fishability.
63 = Greater than 50 % fouled gear due to weather/oceanic conditions. Gear tangled, spun up, or otherwise lowered gear fishability.
66 = Parted off, gear recovered
67 = parted off, gear not recovered
68 = gear completely damaged or lost
69 = split haul (portion of gear having the additional soak time)
99 = Other

"Other" (GEAR_CONDITION = 99) should be clarified in the COMMENTS field.

STRING_NUMBER

Indicates the string number that best describes the gear configuration used in this haul. This can then be related back to the Gear Log data files.

MAINLINE_LENGTH

This field indicates the length, to the nearest tenth of a nautical mile, of the mainline during this set. Generally this is a calculated field (SET_SPEED * SET_DURATION = MAINLINE_LENGTH), however occasionally this information is gained from the on-board electronics (plotted positions of begin and end sets) or information given by the captain. If the information comes from the one of the latter two methods generally this will be indicated in the COMMENTS field.

SET_SPEED

Indicates the vessel's speed, to the nearest tenth of a knot, during the setting of gear. This is usually an **average** value obtained from the vessel's electronics; however if mainline length is known (not calculated) then the vessel's set speed can be calculated (MAINLINE_LENGTH / SET_DURATION = SET_SPEED).

BOTTOM_DEPTH_MINIMUM and **BOTTOM_DEPTH_MAXIMUM**

These fields indicate the depth range of the sea bottom, to the nearest fathom, over which the gear was fishing. These values either come from charts or the vessel's electronics.

HOOK_DEPTH_MINIMUM and **HOOK_DEPTH_MAXIMUM**

These fields indicate the estimated depth range, to the nearest fathom, that the hook fished. These fields are calculated by adding DROPLINE_LENGTH + GANGION_LENGTH + LEADER_LENGTH (each value converted to fathoms) from the Gear Log information. These fields are often referred to as "fishing depth".

Care should be used when using this information. Fishing depth is not only affected by dropline and gangion length, but also by the number of hooks between floats. For example, a haul that has a HOOK_DEPTH_MAXIMUM of 25 fathoms and uses 6 hooks between floats would in general fish deeper (due to greater sag) than a haul that has the same hook depth but only fishes 4 hooks between floats (lesser sag). In addition, recent work with time depth recorders (TDRs) placed on pelagic longline gear indicates that calculated methods are poor predictors of actual fishing depth. Actual fishing depth can be strongly influenced by oceanic conditions, catch of large animals on the line, or many other factors. These things may vary from day to day even in the same general location. Actual fishing depth, and methods to better estimate this parameter, are currently the subject of much research. We suggest analysts who intend to use this field as a major factor in their analyses should review the current state of the research.

TOTAL_ADDITIONAL_WEIGHT

Indicates, to the nearest pound, the total weight of the additional line weights for this set/haul. This is weight attached to the mainline and is **not** associated with radar reflectors, radio beacons, anchors or gangions/leaders. Sometimes clarification of where this weight was attached will be found in the COMMENTS field. In general, additional weights are generally used (if at all) to get the gear down to fishing depth quickly, or to get a certain portion of the gear deep quickly because the captain is setting the gear across the path of a large vessel. Especially since the weight in this field is usually attached at the beginning and end of the mainline, it should not be assumed that these weights considerably affect the overall average fishing depth of the entire haul.

Users should also note that the NEFSC observers (see documentation for TRIP_NUMBER field above for information on how to differentiate NEFSC trips from SEFSC trips) were trained to record this information differently. Total additional line weight, in the form of either weight attached directly to the mainline, clipped onto the gangions, or even in the form of weighted swivels, seems to have been included in this field for NEFSC trips.

There is no supporting documentation or notes in the NEFSC trip hard files that allows conversion of these fields to obtain consistency between NEFSC and SEFSC trips. If users wish to include this data field as a factor in analyses, NEFSC and SEFSC trips should be considered separately.

TARGET_SPECIES

Indicates the primary target species (or species group) being targeted in this haul, using one of the following 3 character codes:

SWO = swordfish (*Xiphias gladius*)
YFT = yellowfin tuna (*Thunnus albacares*)
BET = bigeye tuna (*Thunnus obesus*)
TUN = mixed tuna (generally YFT and BET but sometimes including albacore (*Thunnus alalunga*)
SHX = mixed shark, generally large coastals
DOL = dolphinfish (*Coryphaena hippurus*)
MIX = Occurs when there is an overlap between two species or multiple species are being targeted. "MIX" generally means a mix of swordfish and tuna but can also mean a mix between swordfish and dolphinfish or tuna and dolphinfish.

This field has had various definitions throughout the years. In the early years of the POP this field was derived from the captain's information, which usually coincided with certain gear characteristics and was reflected in the actual catch. To attempt to reduce confusion, certain criteria were introduced around 2001, **e.g.: >50% hooks with light sticks and a night soak, is a swordfish-directed set, and <50% light sticks and a day soak is a tuna directed set, and < 50% light sticks and a night soak is a mix set.** For various reasons these criteria have recently (summer 2005) been discarded in favor of the original criteria. However, there are some cases where target species is clear: in the Gulf of Mexico(GOM), a vessel that sets gear in the morning and hauls back in the evening, and does not use light sticks, will most likely be targeting YFT. If a vessel in the GOM is setting gear in the evening and hauling back in the morning and using lightsticks but not on every hook, with either squid or sardine bait, that vessel is generally targeting a MIX of YFT and SWO. A vessel that sets in the evening and hauls back in the morning, and uses a light stick on every hook with Atlantic mackerel bait, will most

likely be targeting SWO. A vessel that sets in the evening, hauls in the morning, uses a large number of hooks between floats to get the gear sunk deep, uses lightsticks, and squid bait, will most likely be targeting BET.

Analysts should realize the pelagic longline fishery is in many respects a multi-species fishery. Due to this characteristic, along with the various changes to the criteria for this field, the POP suggests that care should be taken when using TARGET_SPECIES as a factor in analyses. Use of user-defined gear configuration and deployment criteria (rather than using TARGET_SPECIES as an assumed proxy for these criteria) may be more appropriate.

SOAK_DURATION

This field indicates the amount of time, to the nearest tenth of an hour, that **all** the gear was in the water. This is defined as the time period between end set and begin haul.

WERE_FLOATS_USED

Indicates if polyballs, bullet floats/daubs, or other floats (see definitions in gear log documentation) were used during this set. NO = 0, YES = 1.

NUMBER_OF_FLOATS

If the above field = 1, (yes), this field will indicate the number of polyballs, bullet floats/daubs, or other floats used during the set. If the above field = 0 (no) this field may be either zero or a null value.

WERE_LIGHT_STICKS _USED

Indicates if chemical or electrical submerged lightsticks were used during this set. NO = 0, YES = 1.

NUMBER_LIGHT_STICKS

If the above field = 1, (yes), this field will indicate the number of lightsticks used during the set. If the above field = 0 (no) this field may be either zero or a null value.

WERE_RATTLERS_USED

This field indicates if rattlers were used during this set. NO = 0, YES = 1. Rattlers are strings of beads that are used as sound producing devices, attached to the gangion somewhere. Their use is not very commonplace in this fishery.

NUMBER_RATTLERS

If the above field = 1, (yes), this field will indicate the number of rattlers used during the set. If the above field = 0 (no) this field may be either zero or a null value.

WERE_SURF_LITES_USED

Indicates if surface lights were used during the set. NO = 0, YES = 1. Surface lights are usually attached to a beeper or high flyer to aid in the night time recovery of these items, or to allow the vessel to stay in close proximity to these items during a night soak. They may be battery operated strobes but sometimes may simply be chemical light sticks taped to the beeper or high flyer.

NUMBER_SURF_LITES

If the above field = 1, (yes), this field will indicate the number of surface lights used during the set. If the above field = 0 (no) this field may be either zero or a null value.

WERE_RADIO_BEACONS_USED

This field indicates if radio beacons were used during the set. NO = 0, YES = 1. See gear log documentation for definition of radio beacons.

NUMBER_RADIO_BEACONS

If the above field = 1, (yes), this field will indicate the number of radio beacons used during the set. If the above field = 0 (no) this field may be either zero or a null value.

WERE_RADAR_REFLECTORS_USED

Indicates if radar reflectors were used during the set. NO = 0, YES = 1. See gear log documentation for definition of radar reflectors.

NUMBER_RADAR_REFLECTORS

If the above field = 1, (yes), this field will indicate the number of radar reflectors used during the set. If the above field = 0 (no) this field may be either zero or a null value.

ADDITIONAL_LINE_WEIGHTS_USED

This field indicates if weight(s) were added to the mainline. This is weight attached to the mainline and is **not** associated with radar reflectors, radio beacons, anchors or gangions/leaders. See explanation for TOTAL_ADDITIONAL_WEIGHT above.

NUMBER_ ADDITIONAL_LINE_WEIGHTS

If the above field = 1, (yes), this field will indicate the number of additional line weights used during the set, and the total weight, in pounds, of the additional line weights will appear in the TOTAL_ADDITIONAL_WEIGHT field. If the above field = 0 (no) this field may be either zero or a null value.

NUMBER_HOOKS_SET

Indicates how many hooks were set during the deployment of the gear for this haul. This field is probably the most appropriate field for catch/effort analyses if hooks are chosen as the unit of effort.

NUMBER_HOOKS_LOST

This field indicates how many hooks were lost during this set/haul. This field should relate to **GEAR_CONDITION** and may include "bite offs" and "break offs"(missing hooks assumed to be the result of some animal either breaking the line or biting through the line) as well as hooks missing as a result of gear lost due to weather, tangles with other vessels' gear, or large vessels. It also includes hooks lost because they were purposely cut off during the release of bycatch.

NUMBER_HOOKS_TENDED

Indicates the number of hooks pulled up **prior** to the actual beginning of the haul. This generally infers a technique called "hotlining", where a vessel runs down the length of the line pulling up individual hooks where floats are submerged. This was more common in the early years of the POP data, particularly in the live bait YFT-directed fleet in the Gulf of Mexico.

NUMBER_HOOKS_REBAITED

This field indicates the number of hooks pulled, rebaited, and put back into the water for additional soak time. This number is added into the **NUMBER_HOOKS_SET** field. Rebaiting was usually associated with hotlining and is no longer common in the US pelagic longline fleet.

BAIT_NUMBER_USED_1

Indicates the number of baits used during this set. If multiple kinds of baits were used, this should be the numerically dominant type of bait. If multiple kinds of bait are used in a single set, this will be reflected in other fields (e.g. BAIT_NUMBER_USED_2, BAIT_NUMBER_USED_3, etc). The sum of the values of all BAIT_NUMBER_USED fields For any single set should equal the value in the NUMBER_HOOKS_SET field, except when multiple bait kinds are put on a single hook. This type of combination bait is relatively rare, and generally involves the use of an artificial bait in conjunction with a natural bait.

BAIT_WEIGHT_1

Indicates to the nearest pound the total weight of bait (of BAIT_NUMBER_USED_1) used during this set. Dividing this field by BAIT_NUMBER_USED_1 will give the approximate weight of each individual bait of this type.

BAIT_KIND_1

Indicates the kind of bait used, according to the following codes:

01 = Mackerel (most often *Scomber scombrus*)
02 = Herring (*Clupeidae sp.*)
03 = Squid (most often *Illex sp.*)
04 = Artificial
05 = Sardine (most often *Sardinella aurita*)
06 = Scad (most often *Selar crumenophthalmus*)
99 = Other

If the value in the field is “Other” (99) this should be explained in the COMMENTS field.

BAIT_TYPE_1

This field indicates the type of bait used, according to the following codes:

1 = Whole
2 = Cut
3 = Live
9 = Other

If the value in the field is "Other" (9) this should be explained in the COMMENTS field. "Cut" bait is defined as bait that is only a cut portion of a whole animal. Use of "Live" bait was relatively common in the Gulf of Mexico (very rare outside the Gulf) but was prohibited by regulation in September 2000 for the Gulf of Mexico.

BAIT_CONDITION_1

Indicates the condition of the bait used according to the following codes:

1 = Frozen
2 = Semi frozen
3 = Thawed
4 = Fresh
5 = Salted
9 = Other

If the value in the field is "Other" (9) this should be explained in the COMMENTS field. Generally this field will be "Other" if the bait kind is an artificial, or if baits are re-used from a previous set (rare).

BAIT_WEIGHT_2, BAIT_KIND_2, BAIT_TYPE_2, BAIT_CONDITION_2
BAIT_WEIGHT_3, BAIT_KIND_3, BAIT_TYPE_3, BAIT_CONDITION_3

These fields have the same meanings as the above fields but are only used if multiple baits are used during a single set. The data only accounts for up to 3 different baits in any given set; use of 4 or more is extremely rare and would be noted in the COMMENTS field.

BEGIN_SET_DATE

Indicates the date that the set was begun (defined as the calendar date when the first piece of gear hits the water, almost invariably a high flyer or radio beacon- see gear log documentation for definitions)

BEG_SET_TIME

This field indicates the time, to the nearest tenth of an hour, the set was begun (defined as the time when the first piece of gear hits the water, almost invariably a high flyer or radio beacon- see gear log documentation for definitions). It is important to note that observers are instructed to use "vessel time" when completing all time data fields. Vessel time is usually determined by the vessel's port of departure, and is not (normally) changed by the vessel's personnel when the vessel moves into a different time zone. In most cases changes of time zones are more the exception than the rule; however this could (for example) result in a one hour inaccuracy for vessels departing the west coast of Florida and fishing the central Gulf of Mexico, and several hours of inaccuracy for vessels departing a port on the northeast coast of the US and fishing off the Grand Banks of Newfoundland. Occasionally notes in the COMMENTS fields can clarify the time zone.

BEGIN_SET_LATITUDE

Indicates the latitude in degrees, when the first piece of gear went into the water. In some cases only loran numbers may have been available, in these cases a conversion program was used to transform the values.

BEGIN_SET_LATITUDE_MINUTES

Indicates the minutes of latitude, to the nearest minute, when the first piece of gear went into the water.

BEGIN_SET_LATITUDE_HEMISPHERE

Indicates the hemisphere (N or S) where the first piece of gear went into the water. Because all observed fishing effort occurred in the northwestern Atlantic, all the values for this field should be "N".

BEGIN_SET_LONGITUDE

Indicates the longitude in degrees, when the first piece of gear went into the water. In some cases only loran numbers may have been available, in these cases a conversion program was used to transform the values.

BEGIN_SET_LONGITUDE_MINUTES

Indicates the minutes of longitude, to the nearest minute, when the first piece of gear went into the water.

BEGIN_SET_LONGITUDE_HEMISPHERE

Indicates the hemisphere (E or W) where the first piece of gear went into the water. Because all observed fishing effort occurred in the northwestern Atlantic, all the values for this field should be "W".

BEGIN_SET_TEMPERATURE

This field indicates the surface water temperature in degrees to the nearest tenth of a degree Fahrenheit, when the first piece of gear hits the water. Observers record this information from the vessel's instrumentation, or if the vessel is not equipped with a temperature gauge, by lowering a bucket over the side and using a hand-held thermometer. Temperatures are taken in the Fahrenheit scale because this is the favored display setting for vessel temperature gauges in the US fishery. It should be noted that vessel's temperature gauges are often not calibrated (vessels care less for accuracy than for precision- what matters is how temperature changes, rather than what the actual values of the temperature is). Further, the proximity of the hull transducer (the sensor of the vessel's temperature gauge) to certain mechanical

portions of the vessel (e.g. engine heat exchangers) may result in a wide fluctuation of temperatures if the gauge is read while the vessel is underway, or if it is read while stationary.

END_SET_DATE, END_SET_TIME, END_SET_LATITUDE, END_SET_LATITUDE_MINUTES, END_SET_LATITUDE_HEMISPHERE, END_SET_LONGITUDE, END_SET_LONGITUDE_MINUTES, END_SET_LONGITUDE_HEMISPHERE, END_SET_TEMPERATURE

These fields are defined exactly like the previous 9 fields, except the values are taken when the last piece of gear (normally a high flyer or radio beacon) is put into the water.

SET_DURATION

Indicates the amount of time, to the nearest tenth of an hour, it takes to set out all the gear for this set. It is calculated as the time period between **BEGIN_SET_TIME** and **END_SET_TIME.**

BEGIN_HAUL_DATE, BEGIN_HAUL_TIME, BEGIN_HAUL_LATITUDE, BEGIN_HAUL_LATITUDE_MINUTES,BEGIN_HAUL_LATITUDE_HEMISPHERE, BEGIN_HAUL_LONGITUDE, BEGIN_HAUL_LONGITUDE_MINUTES, BEGIN_HAUL_LONGITUDE_HEMISPHERE, BEGIN_HAUL_TEMPERATURE

These fields are defined exactly like the previous 9 fields, except the values are taken when the first piece of gear (normally a high flyer or radio beacon) is removed from the water.

END_HAUL_DATE, END_HAUL_TIME, END_HAUL_LATITUDE, END_HAUL_LATITUDE_MINUTES, END_HAUL_LATITUDE_HEMISPHERE, END_HAUL_LONGITUDE, END_HAUL_LONGITUDE_MINUTES, END_HAUL_LONGITUDE_HEMISPHERE, END_HAUL_TEMPERATURE

These fields are defined exactly like the previous 9 fields, except the values are taken when the last piece of gear (normally a high flyer or radio beacon) is removed from the water.

HAUL_DURATION

This field indicates the amount of time, to the nearest tenth of an hour, that it takes to haul in all the gear for this set. This is calculated as the time period between BEGIN_HAUL_TIME and END_HAUL_TIME, **minus** any "lost time" (lost time is any time period >20 minutes where the vessel stopped hauling due to searching for gear, fixing mechanical problems, meal breaks, etc). Reasons for lost time, times, and total time should be recorded in the COMMENTS field.

IS_COMMENT

This field indicates if the COMMENTS field contains a non-null value or not. "Y" = yes (COMMENTS field contains information), "N" = no (COMMENTS field contains a null value).

COMMENTS

Indicates additional information concerning this set that may not be captured by the other fields, or may specifically relate to one of the other fields. Comments that relate to specific fields are often prefaced by the text "Field number" or "Field #" and a corresponding numeric value. See the observer instructions for a blank haul log which shows the field numbers.