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1011NH CTD Data & Processing (/cruises/older-cruises/2010-cruises/calcofi-1011nh/695-1011nh-ctd-data-processing.html)

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📅 Last Updated: 22 January 2018

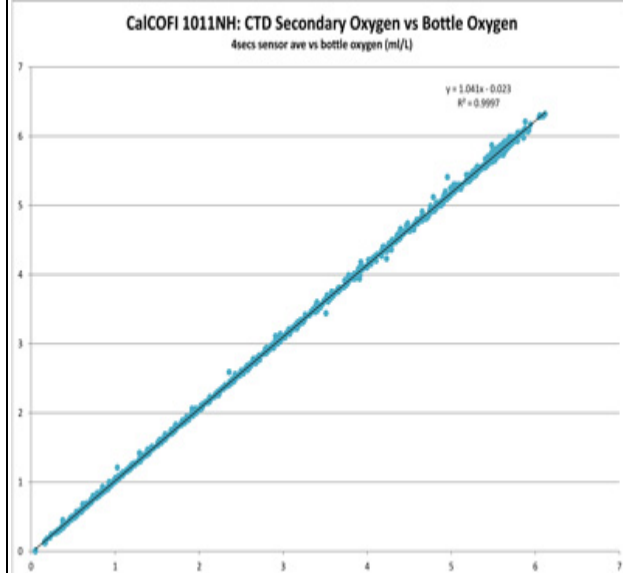
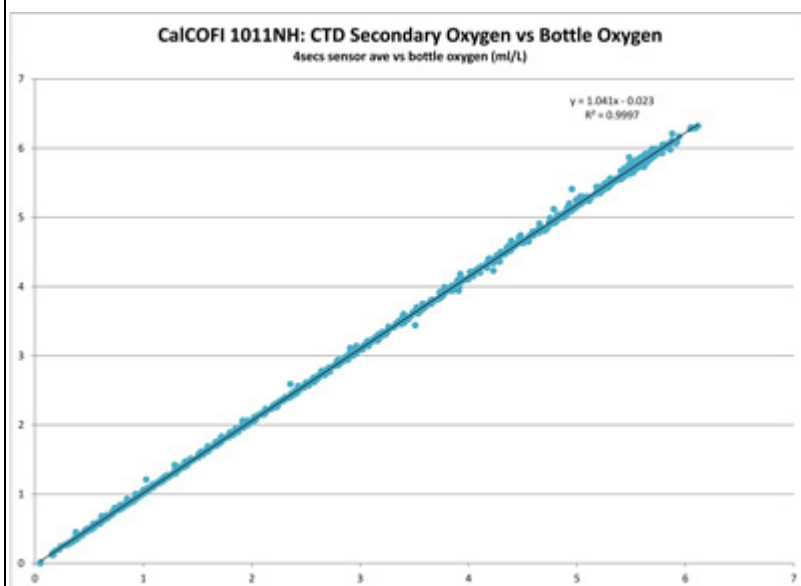


CTD Processing Summary CalCOFI 1011NH CTD Final Data (reformatted 01/2018 for QC columns & O2 uM/Kg)

Download 1011NH CTD raw cast files zipped (http://cappuccino.ucsd.edu/downloads/2010/20-1011NH_CTDCast.zip)		Download 1011NH FinalQC CTD + bottle data (http://cappuccino.ucsd.edu/downloads/2010/20-1011NH_CTDFinalQC.zip)
General CTD Notes - data acquisition cast notes, logistics, processing notes are listed below		
CTD sensor corrections derived by comparing 4 secs of CTD sensor data (prior to bottle closure) to bottle samples		
Dual T, S, & O2	Primary Sensor	Secondary Sensor
Salinity offset (bottle - CTD salinity; > 350m only; Seabird SBE4)	-0.0037	-0.0010
Oxygen (ml/L; dual Seabird SBE43)	y = 1.042x - 0.0123 R ² = 0.9998	y = 1.041x - 0.023 R ² = 0.9997
Oxygen (umol/Kg; dual Seabird SBE43)	y = 1.042x - 0.5351 R ² = 0.9998	y = 1.041x - 0.9988 R ² = 0.9997
Single sensors		
Nitrate - ISUS 4sec ave voltage vs Bottle Nitrate (Satlantic MBARI-ISUS v2)	y = 27.909x - 6.1266 R ² = 0.9798	
Fluorometer - linear & polynomial regressions	y = 5.8341x - 0.0394 R ² = 0.7065	y = -4.0881x ² + 7.8316x - 0.1188 R ² = 0.7221

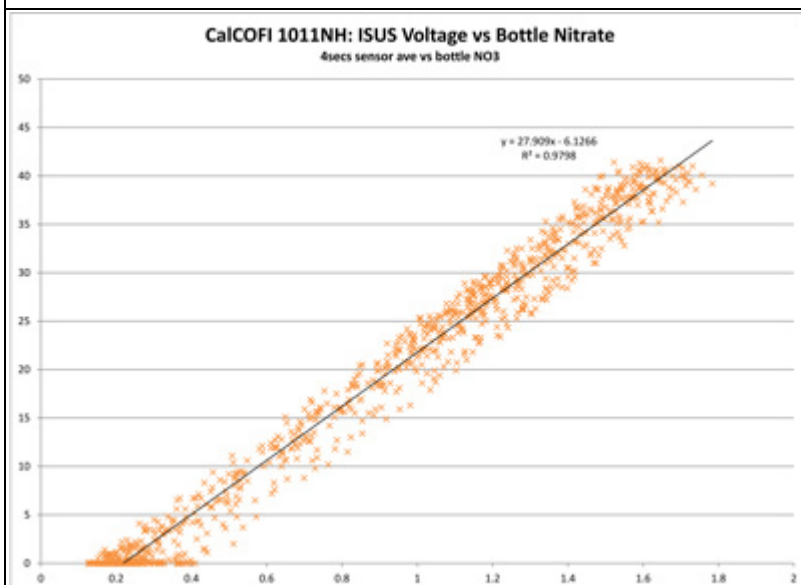
(http://cappuccino.ucsd.edu/downloads/2010/1011NH/1011NH_Ox1MLvsOxBML.jpg)

(http://cappuccino.ucsd.edu/downloads/2010/1011NH/1011NH_Ox1UMvsOxBUM.jpg)

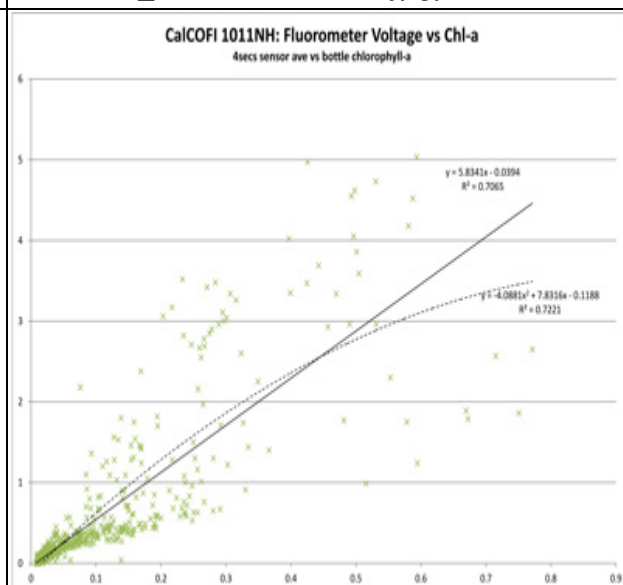


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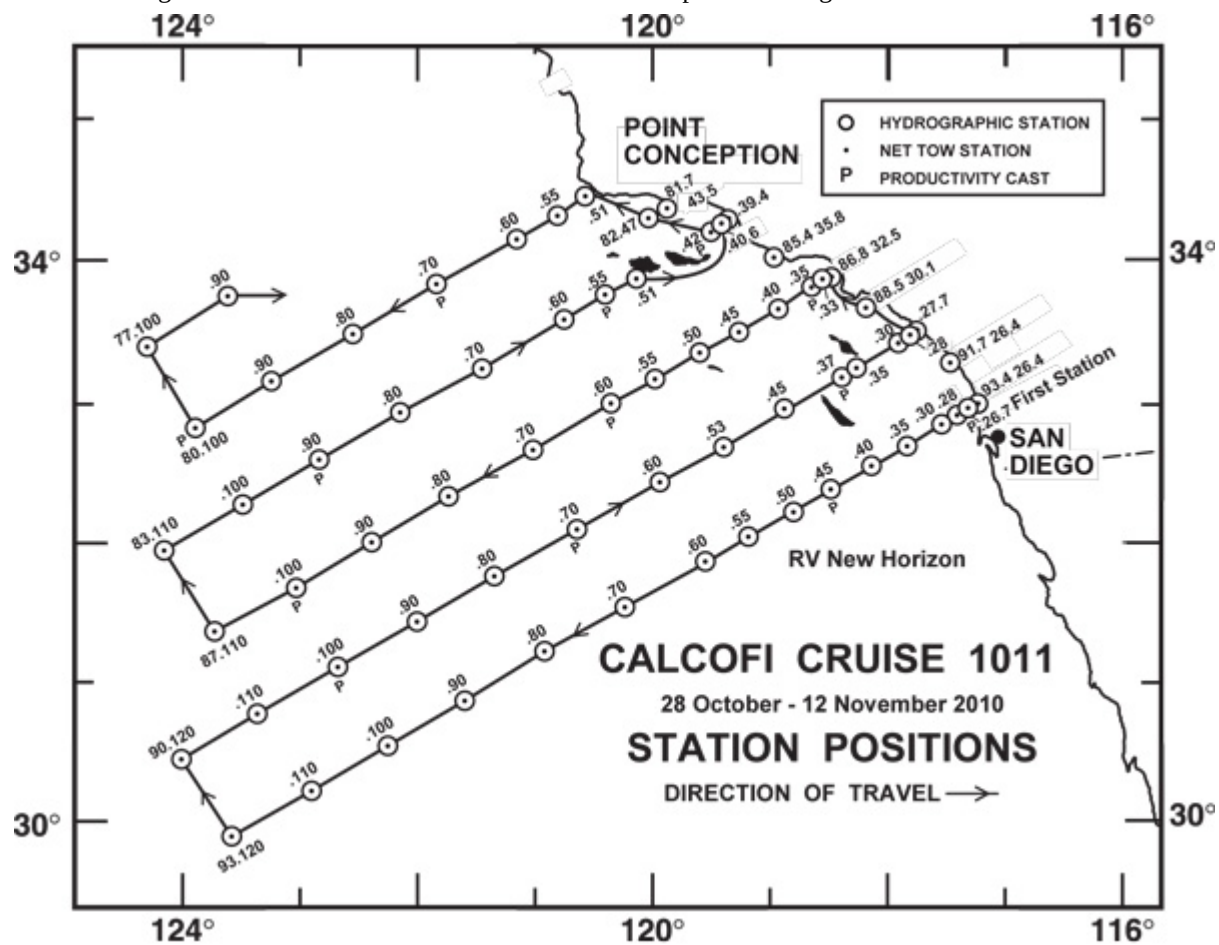
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(http://cappuccino.ucsd.edu/downloads/2010/1011NH/1011NH_ISUSVvsNO3.jpg)



(http://cappuccino.ucsd.edu/downloads/2010/1011NH/1011NH_FIVvsChla.jpg)



(http://cappuccino.ucsd.edu/downloads/underway/2010/1008NH/1008NH_CruiseTrack.png)

General notes:

CalCOFI 1011NH: 28 Oct - 12 Nov 2010 on SIO R/V New Horizon: CalCOFI 1011NH returned on RV New Horizon to San Diego 12 Nov 2010 at 1530 after occupying 67 out of 75 stations. Station operations were halted due to New Horizon's generator failure; the last 5 stations on line 76.7 (76.7 70, 60, 55, 51, 49) were not occupied. On the 76.7 80.0 prodo station, net tows were performed but operations were halted before the CTD cast. One SCCOOS station, 80.0 50.5, postponed till after 76.7 49.0 due to high winds, was also missed. Around-the-clock naval operations precluded occupation of station 90.0 45.0 during our cruise dates. Acoustic calibrations were conducted from 1600 12 Nov to 1030 13 Nov.

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911+ "Walter", Serial number 0936) with a 24-10L bottle rosette was deployed at each station. Dual temperature (2-SBE 3+), conductivity (2-SBE 4), and oxygen (2-SBE 43) sensors were deployed; each set of three sensors (T, C, O₂) plumbed in series to a Seabird pump (2-SBE 5t). Additional sensors include: Seapoint fluorometer (10x), Seatech 25cm transmissometer (660nm), Biospherical remote PAR (QSP-2300), QSR-240 surface PAR (RV New Horizon's), SBE 18 pH sensor, ISUS v2 nitrate sensor, and altimeter.

Each CTD/rosette cast sampled ~20 depths to a maximum sampling depth of ~515 meters, bottom depth permitting. The bottle spacing is designed to sample depth intervals as close as 10 meters around the sharp upper thermocline features such as the chlorophyll, oxygen, nitrite maxima and the shallow salinity minimum. Salinity, oxygen and nutrients were determined at-sea for all depths sampled. Chlorophyll-a and phaeopigments were determined at-sea on samples from the top 200 meters, bottom depth permitting.

Cast specific Notes from Console Ops:

Cast 001 sta 93.3 26.7: prodo cast, 10 bottles, 70m bottom; mrk file had wrong variables

Cast 002 sta 93.4 26.4 SCCOOS: 4-bottle 15m cast, "35m" bottom - high freq Knudsen wrong - set CTD-rosette on bottom, will use low freq next shallow station

Cast 003 sta 91.7 26.4 SCCOOS: 23m bottom, 4-bottle cast

Cast 004 sta 93.3 28.0: 515m 20-bottle type I cast, chl max at 25m; low oxygen (1.6ml/L) @200m downcast; non-confirmation on bottle 19 (10m) so another one was tripped at 20m, two bottles at 10m as well - bottles 19 & 21 (dup 20m & 10m) were not sampled

Cast 005 sta 93.3 30.0: Oozeki trawled onto station. 515m 20-bottle type I cast, 19m chl max; few min winch delay on upcast around 320m; Knudsen 3260 draft offset = 4m; 1.5ml/L O2 ~250m, small feature @230-25-m (in TS too); TSG flowrate @0gpm discovered @~270m by MGS.

Cast 006 sta 93.3 35.0: 515m 20-bottle type I cast, chl max at 10-30m

Cast 007 sta 93.3 40.0: 22m chl max, type I 21-bottle cast

Cast 008 sta 93.3 45.0: 20m chl max, type I; 12m secchi, 22-bottle prodo sta; pH sensor was not covered/soaking - measured >9 @ surface; bottle #17 clicked twice to fire, non-confirmed but okay so mrk edited before backup

Cast 009 sta 93.3 50.0: 32m chl max, type I; bottle #1 non-confirmation, bottle #17 & #20 also non-confirm but 21 bottles closed upon retrieval, #1 (515m) is only duplicate

Cast 010 sta 93.3 55.0: 30m chl max, type I; 21-bottle 515m cast, extra LTER 10m bottle; big slow rolls +-2m; new trackball and rebooted pre-cast to help non-confirms/software; new pH coefficients updated

Cast 011 sta 93.3 60.0: 36m chl max, type I 20-bottle cast to 515m after ~1.5hr delay - Oozeki trawl (2200PST) upon arrival, then CTD winch problem; pH dips @270m & 290m

Cast 012 sta 93.3 70.0: 40m chl max, type I prodo sta, 22 bottles; #19 non-confirm, had to fire 2x; mrk file edited

Cast 013 sta 93.3 80.0: 50m chl max type I; ship rolling pretty good; #19 tripped okay, CTD can out of water at surface

Cast 014 sta 93.3 90.0: 100m chl-max type II/III; bottle #9 non-confirm 2x then jumped to #11 (so most likely closed); unusual O2 profile - hypoxic @~340m; pH & ISUS look good; pH check sample station

Cast 015 sta 93.3 100.0: small 75m chl max type II/III Mod; tripping problem continues - bottle #4 (320m) tripped 2x but only one mrk; three bottle open at upon retrieval so both tripped; mrk file corrected before backing up

Cast 016 sta 93.3 110.0: chl max 98m, type II/III, 24 bottle prodo sta; #9, #10, #11 all non-confirmed but all came up closed

Cast 017 sta 93.3 120.0: 107m chl max type II/III; long slow rolls; Oct 31st - Happy Halloween!

Cast 018 sta 90.0 120.0: 90m chl max type II/III 20 bottles; nothing noted

Cast 019 sta 90.0 110.0: 90m chl max type II/III Mod 21 bottle cast; non-confirm @170m bottles #8, tripped an extra (#9)

Cast 020 sta 90.0 100.0: 90m chl max type II/III; 22 bottle prodo sta (bottle #23 tripped for O2 test case)

Cast 021 sta 90.0 90.0: 85m chl max type II/III 24-bottle 3500m; PAR, pH, ISUS+battery removed pre-cast; ~1680m on downcast, winch stopped for a couple seconds (hand fatigue?); 2 pH check samples drawn on upcast

Cast 022 sta 90.0 80.0: 75m chl max type II/III Mod; bottle #20 tripped in air so #21 tripped at surface

Cast 023 sta 90.0 70.0: 42m chl max type I prodo cast 21-bottles; bottle #20 didn't close, sent back to 13m & bottle #22 closed

Cast 024 sta 90.0 60.0: 26m chl max type I; bottle #20 tripped but didn't close so #21 tripped without a new marker - all bottle #20 samples taken from #21; trigger #20 replaced post-cast. Unusual stratification between 100-200m, big rolls

Cast 025 sta 90.0 53.0: 20m chl max type I; nothing noted

Sta 90.0 45.0 skipped due to navy ops

Cast 026 sta 90.0 37.0: 20m chl max type I; 20 bottle 515m prodo cast, #21 O2 test case

Cast 027 sta 90.0 35.0: 25m chl max type I; 19 bottles - 370m bottom

Cast 028 sta 90.0 30.0: 20m chl max, 20 bottle 515m cast;

Cast 029 sta 90.0 27.7 SCCOOS: 32m bottom, 6-bottles 25-0m; a bit deep (32m bottom) - night but calm

Cast 030 sta 90.0 28.0: 65m shallow 8 bottle cast;

Cast 031 sta 88.5 30.1 SCCOOS: 20m bottom, 4-bottle cast, 5m chl max;

Cast 032 sta 86.8 32.5 SCCOOS: 29m bottom, 5-bottle cast; CTD sent down to 9m to dislodge a kelp patty @surface before returning to surface and tripping bottle #5

Cast 033 sta 86.7 33.0: shallow 58m bottom, 8-bottle cast; tanker anchored on station position, had to move 1nm from station to do the cast

Cast 034 sta 86.7 35.0: 25m chl type I 22 bottle prodo cast; tripped 2x @ bottle #6 & #7; two bottles open at surface so 2nd trip close #6. scan length expected 88, got 58; rs232 interrupted (retry), then stopped

Cast 035 sta 86.7 40.0 Santa Monica Basin: 22m chl max type I, 24-bottle basin station cast; bottom 793m; no non-confirms noted

Cast 036 sta 86.7 45.0: 20m chl max type I 21-bottle 515m cast (extra LTER 10m bottle)

Cast 037 sta 86.7 50.0: 33m chl max type I; San Nic Is station, 81m bottom; 10-bottle cast

Cast 038 sta 86.7 55.0: 25m chl max type I; 22-bottle cast - LTER extras @chl max & 10m

Cast 039 sta 86.7 60.0: 26m chl max type I 23-bottle prodo station; ship rolling pretty good

Cast 040 sta 86.7 70.0: 30m chl max type I, 21-bottle cast

Cast 041 sta 86.7 80.0: 50m chl max type I; 21-bottle cast

Cast 042 sta 86.7 90.0: 85m chl max type II/III Mod; 21-bottle cast

Cast 043 sta 86.7 100.0: 90m chl max type II/III; 23-bottle prodo cast; 35m secchi

Cast 044 sta 86.7 110.0: 100m chl max type II/III; ship rolling significantly; deck unit signal source accidentally bumped/set to "Tape" on start of upcast; Cast restarted as 044b ~374m - will have to join the two casts (44a & 44b) upcast together. Hit the mrk/fire button 3x to sync back up bottle trips (since the carousel resets to #1 when restarted)

Cast 045 sta 83.3 110.0: 84m chl max type II/III; big rolls continue; bottle #10 no confirm so 2x trip & mrk; 4 open at surface so initial trip did not close - mrk corrected

Cast 046 sta 83.3 100.0: 55m chl max type II/III; nothing noted

Cast 047 sta 83.3 90.0: 48m chl max type I 22-bottle prodo cast; no deck unit issues noted;

Cast 048 sta 83.3 80.0: 25m chl max, 21-bottle 515m cast, extra at 10m; big swell, going down a bit slower

Cast 049 sta 83.3 70.0: 23m (0-25m) chl max type I; big rolls, down @30m/min to 100m then 40m/min to 200m then 50-55m/min to 515m

Cast 050 sta 83.3 60.0: 0-30m chl max type I 21-bottle cast, nothing noted

Cast 051 sta 83.3 55.0: 22m chl max, 24-bottle prodo cast; windy & wavy

Cast 052 sta 83.3 51.0: 20m chl max, 13-bottle cast to 85m, 103m bottom; nets cancelled, Oozeki trawl postponed to Santa Cruz Canyon after dark; blowing 25-30kts, seas 8-10ft

Cast 053 sta 85.4 35.8 SCCOOS: 20m bottom, 5-bottle cast (2x10m)

Cast 054 sta 83.3 39.4 SCCOOS: 21m bottom, 5-bottle cast to 15m (2x10m)

Cast 055 sta 83.3 40.6: surface chl max type I; 6-bottle 25m cast in 35m of water

Cast 056 sta 83.3 42.0: chl max 23m; 15-bottle 140m cast prodo cast

Cast 057 sta 81.7 43.5 SCCOOS: 20m bottom; 4-bottle 20m cast

Cast 058 sta 81.8 46.9 Santa Barbara Basin: 15m chl max; 24-bottle cast to 567m (10m off bottom according to altimeter); Knudsen reads 585m; bottle #19(50m) bottom valve open at surface

Cast 059 sta 80.0 51.0: 0-20m chl max type, 9-bottle cast 70m cast (~6m off 77m bottom); wind ~18-19kts but relatively calm here

Cast 060 sta 80.0 55.0: near CCE-LTER mooring; 10m chl max (0-28m), 21-bottle 515m cast; big rolls - going down slow ~30m/min all the way; 26kt winds; O2 feature @200m on downcast (T S too); CTD prepped upon arrival to station (too rough to pre-sta prep)

Cast 061 sta 80.0 60.0: 35m (0-45m) chl max type I; nothing noted but there was an ISUS voltage dropout on downcast between 441m-375m (pressure db)

Deck test 003 performed before Cast 062

Cast 062 sta 80.0 70.0: 18m chl max type I 22-bottle prodo cast

Cast 063 sta 80.0 80.0: 0-22m chl max type I 20 bottle cast; rough weather but Murline on winch taking it down @60m/min, seems okay but adjusting speed on BIG rolls

Cast 064 sta 80.0 90.0: shallow m chl max type I 3500m deep cast; PAR, ISUS, pH removed; @705m CTD ALL STOP @0012PST - smell of winch brakes, 0015PST slowly moving down @~21m/min, 0017PST back up to speed, 0018PST CTD in freefall(!) to 3807m - winch would not stop; @0124PST CTD back up to 3500m, 0140PST all stop with 3222m wire out, CTD depth 2995m. Engineer Randy requested all stop for cool down; continued to surface, tripping bottles at target depths - all 24 closed.

Cast 065 sta 80.0 100.0: 55m chl max type II/III 20-bottle prodo cast; CTD winch wire very "spun", CTD data spiky C1, C2, & O21; 3500m cast is always hard on sensors

Cast 066 sta 76.7 100.0: 30m chl max, 20 bottle cast (#21 O2 test case); major power failure after 1st launch, CTD recovered & relaunched ~60mins later

Cast 067 sta 76.7 90.0: 10m (0-30m) chl max type I; 20-bottle 515m cast, nothing noted

RV New Horizon's main generator failed after Cast 067/Sta 76.7 90.0 so the remaining stations (76.7 80, 70, 60, 55, 51, & 49) were not occupied since New Horizon transited south to San Diego.

Note: although these data were originally processed in 2010, the transcription of console and sample log notes was not started till later. These notes were added in 2018 from the original console operation

forms.

JRW 01/22/2018