NAME

mbauvloglist – Lists table data from an MBARI AUV mission log file.

VERSION

Version 5.0

SYNOPSIS

mbauvloglist –I*file* [**–F***printformat* **–L***lonflip* **–O***list* **–P –S –V –H**]

DESCRIPTION

MBauvloglist reads an MBARI AUV mission log file and lists specified fields in tab-delimited text output. MBARI AUV mission logs are binary files with an ascii header describing the units, name, and binary size of each value in a single record. An example of a log file header is:

binary fastcatlog
timeTag time %8.8e ,time ,UNKNOWN
double conductivity %8.8e ,Calculated conductivity ,Siemens/meter
double temperature %8.8e ,Calculated temperature ,Celsius
double pressure %8.8e ,Calculated pressure ,Decibars
double calculated_salinity %8.8e ,Calculated salinity ,Volts
double cond_frequency %8.8e ,Raw Conductivity frequency ,Hertz
double temp_counts %8.8e ,Raw Pressure A/D counts ,Unitless
double pressure_counts %8.8e ,pressure_counts ,Unitless
double pressure_temp_comp_voltage_reading %8.8e ,Raw pressure temp compensation voltage reading ,Volts
double calculated_sound_velocity %8.8e ,Calculated sound velocity ,M/s
begin

Users can extract arbitrary text lists of values in the AUV log files by using the **–O** option repeatedly to specify fields by name (e.g. calculated_sound_velocity) in the order desired. The print formatting statements (e.g. %8.8e) included in the log header is used by default. However, users can use the **–F** option to specify optional formatting for fields specified in following **–O** commands.

To find out the values contained in any particular log file, use the **–P** option alone to print out a list of the contents. Then run **mbauvloglist** again using the **–O** option to specify each of the desired values in the desired order of columns. The **–F** option can be used to set the printing format. Otherwise, the default format specified in the log header will be used.

As of August 2009, the contents of the MBARI Mapping AUV missions logs are:

DropWeight.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
short WDTimer %d ,Count Down Timer ,Seconds
short BWTimer %d ,Burn Wire Timer ,Seconds
short WDClear %d ,Watch Dog Clear ,Unitless
short AcommsDN %d ,Acoustic Comms Drop Now ,Unitless
short WDStatus %d ,Watch Dog Status ,Unknown
short DWout %d ,Drop Weight Active ,Unitless
short GulperProxIn %d ,Gulper Proximity Sensor ,Unitless

adam6017.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double chan0 %8.8e ,chan0 ,UNKNOWN

double chan1 %8.8e ,chan1 ,UNKNOWN
double chan2 %8.8e ,chan2 ,UNKNOWN
double chan3 %8.8e ,chan3 ,UNKNOWN
double chan4 %8.8e ,chan4 ,UNKNOWN
double chan5 %8.8e ,chan5 ,UNKNOWN
double chan6 %8.8e ,chan6 ,UNKNOWN
double chan7 %8.8e ,chan7 ,UNKNOWN

ats.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double AtsDelta %8.8e ,Last ms drift bt Reson and Auv clocks: drift = delta0 – (tReson-tAuv) ,seconds
double AtsDrift %8.8e ,AtsDrift ,seconds

dvl.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double dvlBotVelx %8.8e ,dvlBotVelx ,UNKNOWN
double dvlBotVely %8.8e ,dvlBotVely ,UNKNOWN
double dvlBotVelz %8.8e ,dvlBotVelz ,UNKNOWN
double dvlBotVele %8.8e ,dvlBotVele ,UNKNOWN
short dvlBotVelStat %d ,dvlBotVelStat ,UNKNOWN
double dvlWatVelx %8.8e ,dvlWatVelx ,UNKNOWN
double dvlWatVely %8.8e ,dvlWatVely ,UNKNOWN
double dvlWatVelz %8.8e ,dvlWatVelz ,UNKNOWN
double dvlWatVele %8.8e ,dvlWatVele ,UNKNOWN
short dvlWatVelStat %d ,dvlWatVelStat ,UNKNOWN
double dvlTemp %8.8e ,dvlTemp ,UNKNOWN
double dvlPitch %8.8e ,dvlPitch ,UNKNOWN
double dvlRoll %8.8e ,dvlRoll ,UNKNOWN
double dvlHeading %8.8e ,dvlHeading ,UNKNOWN
double dvlBeam1 %4.6f ,dvlBeam1 ,UNKNOWN
double dvlBeam2 %4.6f ,dvlBeam2 ,UNKNOWN
double dvlBeam3 %4.6f ,dvlBeam3 ,UNKNOWN
double dvlBeam4 %8.8e ,dvlBeam4 ,UNKNOWN
double dvlRange %8.8e ,dvlRange ,UNKNOWN
double dvlToping %20.4f ,dvlToping ,UNKNOWN
double dvlSpdSnd %12.4f ,dvlSpdSnd ,UNKNOWN

dynamicControl.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double myTime %.2f ,myTime ,UNKNOWN
double xTrackError %8.8e ,xTrackError ,UNKNOWN
double cPsi %8.8e ,cPsi ,UNKNOWN
double cDeltaR %8.8e ,cDeltaR ,UNKNOWN
double tPsi %8.8e ,tPsi ,UNKNOWN
double psiProp %8.8e ,psiProp ,UNKNOWN
double psiInt %8.8e ,psiInt ,UNKNOWN
double psiRate %8.8e ,psiRate ,UNKNOWN
double xteIntegral %8.8e ,xteIntegral ,UNKNOWN
double kxte %8.8e ,kxte ,UNKNOWN
double dPsi %8.8e ,dPsi ,UNKNOWN
double speedCmd %8.8e ,speedCmd ,UNKNOWN
double omegaCmd %8.8e ,omegaCmd ,UNKNOWN
double cDepth %8.8e ,cDepth ,UNKNOWN
double tDepth %8.8e ,tDepth ,UNKNOWN

double DepthError %8.8e ,DepthError ,UNKNOWN
double dIntegral %8.8e ,dIntegral ,UNKNOWN
double mDepthRateTerm %8.8e ,mDepthRateTerm ,UNKNOWN
double cTheta %8.8e ,cTheta ,UNKNOWN
double pitchProp %8.8e ,pitchProp ,UNKNOWN
double pitchInt %8.8e ,pitchInt ,UNKNOWN
double pitchRate %8.8e ,pitchRate ,UNKNOWN
double pitchIntInp %8.8e ,pitchIntInp ,UNKNOWN
double cDeltaEBL %8.8e ,cDeltaEBL ,UNKNOWN
double cDeltaE %8.8e ,cDeltaE ,UNKNOWN
double targetNorthing %13.2f ,targetNorthing ,UNKNOWN
double targetEasting %13.2f ,targetEasting ,UNKNOWN
double newBearing %8.8e ,newBearing ,UNKNOWN
double newNorthing %13.2f ,newNorthing ,UNKNOWN
double newEasting %13.2f ,newEasting ,UNKNOWN
short first %d ,first ,UNKNOWN

fastcatlog.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double conductivity %8.8e ,Calculated conductivity ,Siemens/meter
double temperature %8.8e ,Calculated temperature ,Celsius
double pressure %8.8e ,Calculated pressure ,Decibars
double calculated_salinity %8.8e ,Calculated salinity ,Volts
double cond_frequency %8.8e ,Raw Conductivity frequency ,Hertz
double temp_counts %8.8e ,Raw Pressure A/D counts ,Unitless
double pressure_counts %8.8e ,pressure_counts ,Unitless
double pressure_temp_comp_voltage_reading %8.8e ,Raw pressure temp compensation voltage reading ,Volts
double calculated_sound_velocity %8.8e ,Calculated sound velocity ,M/s

gps.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
integer hours %d ,Hours ,Hours
integer minutes %d ,Minutes ,Minutes
integer seconds %d ,Seconds ,Seconds
integer centiSeconds %d ,CentiSeconds ,CentiSeconds
angle latitude %8.8e ,Vehicle latitude ,Degrees
angle longitude %8.8e ,Vehicle longitude ,Degrees
short quality %d ,GPS quality code ,Unitless
short numberOfSatellites %d ,Number of satellites visible ,Unitless
double hdop %8.8e ,Horizontal dilution of precision ,Unitless
double antennaHeight %8.8e ,Altitude of GPS antenna above mean sea level ,meters
double geoHeight %8.8e ,Geoidal separation ,meters
short dgpsDataAge %d ,Age of differential GPS correction ,seconds
short dgpsRSID %d ,Differential reference station ID ,Unitless

kearfott.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
integer mCyclesK %d ,mCyclesK ,UNKNOWN
integer mModeK %d ,mModeK ,UNKNOWN
integer mMonK %d ,mMonK ,UNKNOWN
double mLatK %3.8f ,mLatK ,UNKNOWN
double mLonK %3.8f ,mLonK ,UNKNOWN
double mNorthK %13.2f ,mNorthK ,UNKNOWN

double mEastK %13.2f ,mEastK ,UNKNOWN
double mDepthK %8.8e ,mDepthK ,UNKNOWN
double mRollK %8.8e ,mRollK ,UNKNOWN
double mPitchK %8.8e ,mPitchK ,UNKNOWN
double mHeadK %8.8e ,mHeadK ,UNKNOWN
double mVbodyxK %8.8e ,mVbodyxK ,UNKNOWN
double mVbodyyK %8.8e ,mVbodyyK ,UNKNOWN
double mVbodyzK %8.8e ,mVbodyzK ,UNKNOWN
double mAccelxK %8.8e ,mAccelxK ,UNKNOWN
double mAccelyK %8.8e ,mAccelyK ,UNKNOWN
double mAccelzK %8.8e ,mAccelzK ,UNKNOWN
double mPrateK %8.8e ,mPrateK ,UNKNOWN
double mQrateK %8.8e ,mQrateK ,UNKNOWN
double mRrateK %8.8e ,mRrateK ,UNKNOWN
double utcTime %8.8e ,utcTime ,UNKNOWN

m3dmgx1.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
angle mRollCB %8.8e ,Roll ,Degrees
angle mOmega_xCB %8.8e ,Roll rate ,Degrees/second
angle mPitchCB %8.8e ,Pitch ,Degrees
angle mOmega_yCB %8.8e ,Pitch rate ,Degrees/second
angle mYawCB %8.8e ,Yaw ,Degrees
angle mOmega_zCB %8.8e ,Yaw rate ,Degrees/second
double mAccel_xCB %8.8e ,Acceleration along vehicle x-axis ,G
double mAccel_yCB %8.8e ,Acceleration along vehicle y-axis ,G
double mAccel_zCB %8.8e ,Acceleration along vehicle z-axis ,G
double mMag_xCB %8.8e ,Magnetic field along vehicle x-axis ,Gauss
double mMag_yCB %8.8e ,Magnetic field along vehicle y-axis ,Gauss
double mMag_zCB %8.8e ,Magnetic field along vehicle z-axis ,Gauss
double mTempCB %8.8e ,Crossbow internal temperature ,Celsius

navigation.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double mPos_x %13.2f ,Vehicle Northing (WGS 84 Zone 10S) ,Meters
double mPos_y %13.2f ,Vehicle Easting (WGS 84 Zone 10S) ,Meters
double mDepth %8.8e ,Vehicle Depth ,Meters
double mGpsNorth %13.2f ,Northing (WGS 84 Zone 10S) based upon GPS fix ,Meters
double mGpsEast %13.2f ,Easting (WGS 84 Zone 10S) based upon GPS fix ,Meters
integer mGpsValid %d ,GPS fix Status code ,Unitless
double mPhi %8.8e ,Vehicle roll ,Degrees
double mTheta %8.8e ,Vehicle pitch ,Degrees
double mPsi %8.8e ,Vehicle yaw ,Degrees
double mOmega_x %8.8e ,Vehicle roll rate ,Degrees/second
double mOmega_y %8.8e ,Vehicle pitch rate ,Degrees/second
double mOmega_z %8.8e ,Vehicle yaw rate ,Degrees/second
double mPsaRange %8.8e ,Altimeter range ,Meters
double mAltitude %8.8e ,Vehicle altitude above bottom ,Meters
double mDvlAltitude %8.8e ,mDvlAltitude ,UNKNOWN
double mWaterSpeed %8.8e ,Current speed based upon DVL data ,Meters/second
integer mDvlValid %d ,Dvl valid flag in Navigation ,UNKNOWN
integer mDvlNewData %d ,Navigation thinks the Dvl has new data ,UNKNOWN
double mDeltaT %8.8e ,Time between Dvl updates ,Seconds
double nfix %13.2f ,Northing (WGS 84 Zone 10S) based upon baseline fix ,Meters

double efix %13.2f ,Easting (WGS 84 Zone 10S) based upon baseline fix ,Meters
double filter_north %13.2f ,Kalman filter northing (WGS 84 Zone 10S) ,Meters
double filter_east %13.2f ,Kalman filter easting (WGS 84 Zone 10S) ,Meters
double filter_depth %8.8e ,Kalman filter depth ,Meters
double north_current %8.8e ,Northward flowing current estimate ,Meters/second
double east_current %8.8e ,Eastward flowing current estimate ,Meters/second
double speed_bias %8.8e ,Speed bias based upon long baseline fixes ,Meters/second
double heading_bias %8.8e ,Heading bias based upon long baseline fixes ,Degrees
double latitude %5.8f ,latitude ,UNKNOWN
double longitude %5.8f ,longitude ,UNKNOWN

parosci.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
double depth %8.3lf ,Depth ,Meters
double temp %8.8e ,Pressure Sensor Internal Temp ,Celsius
double pressure %8.8lf ,Pressure ,Bars
double temp_period %8.8lf ,Temperature Period ,Microseconds
double pres_period %8.8lf ,Pressure Period ,Microseconds

tailCone.log Contents:
timeTag time %8.8e ,time ,UNKNOWN
integer status %d ,status ,UNKNOWN
integer elevatorCurrent %d ,elevatorCurrent ,UNKNOWN
integer rudderCurrent %d ,rudderCurrent ,UNKNOWN
float propCurrent1 %f ,propCurrent1 ,UNKNOWN
integer propCurrent2 %d ,propCurrent2 ,UNKNOWN
integer propRpm %d ,propRpm ,UNKNOWN
float elevatorAngle %f ,elevatorAngle ,UNKNOWN
float rudderAngle %f ,rudderAngle ,UNKNOWN
integer propPwm %d ,propPwm ,UNKNOWN
integer propTemp %d ,propTemp ,UNKNOWN

AUTHORSHIP

David W. Caress (caress@mbari.org)
Monterey Bay Aquarium Research Institute
Dale N. Chayes (dale@ldeo.columbia.edu)
Lamont-Doherty Earth Observatory

OPTIONS

–H This "help" flag cause the program to print out a description of its operation and then exit immediately.

–F *printformat*
Sets the printing format (in fprintf() style) of the next value specified using the **–O** option. By default, **mbauvloglist** uses the print format specified in the log file header. If the **-F** option has been used, using it again with *printformat* equal to "default" will reset the print format to that specified in the log file header.

–I *ifile*
Sets the input MBARI AUV mission log filename.

–L *lonflip*
Sets the range of the longitude values output. If *lonflip*=–1 then the longitude values will be in the range from –360 to 0 degrees. If *lonflip*=0 then the longitude values will be in the range from –180 to 180 degrees. If *lonflip*=1 then the longitude values will be in the range from 0 to 360 degrees.

Default: **mbauvloglist** uses the user default *lonflip* set using **mbdefaults**.

−O *valuename*
Causes **mbauvloglist** to output the specified value. This option can be given multiple times, and the values will be output in the order specified.

−P
Prints out the log file header.

−S
Scales angular values to be in degrees instead of radians.

−V The **−V** option causes the program to be verbose.

EXAMPLE

To extract a list of pressure and water sound speed from the CTD log of an AUV mission, use:

```
mbauvloglist −I mvc_logs/2006.224.00/fastcatlog.log \
        -F%f −O pressure −O calculated_sound_velocity
```

This simple list is ordered as the data were collected, following the ups and downs of the AUV mission. In order to construct a model of the water sound speed as a function of depth, one can sort the output of **mbauvloglist** (using the program **sort**) to be ordered with increasing pressure (depth), and then resampled into uniform increments of pressure using the **GMT** program **sample1d**.

```
mbauvloglist −I mvc_logs/2006.224.00/fastcatlog.log \
        -F%f −O pressure −O calculated_sound_velocity \
        | sort −n −u > auv_ssv.txt
sample1d auv_ssv.txt −Fl −H1 −S0.0 −I10.0 > auv_ssv_bin.txt
```

SEE ALSO

mbsystem(1), **sample1d**, **sort**.

BUGS

Indubitably.