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Report of the Planning Group on the HAC Data Exchange Format (PGHAC)

By correspondence

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Executive summary

The Planning Group on HAC Data Exchange Format [PGHAC] worked by correspondence in 2008 and reported to the Working Group on Fisheries Acoustic Science and Technology [WGFAST] at its annual meeting in Ancona, Italy on 20 May 2009.

Progress on the terms of reference for 2008 was presented to WGFAST with the following key points:

- The format has remained unchanged in 2008 and 2009, updated version of CRR 278 from October 2007 is available on request to PGHAC chair.
- A survey was conducted in May 2009 in order to report on the use of HAC format within ICES community. The format is recognized as a standard which also gives guidelines for proper acquisition of hydroacoustics data in order to observe ecosystems. Its use remains limited as it coexists with sounder manufacturer proprietary format. It is however the standard for exchanging data in science program and for national databases in several institutions.

Discussion during WGFAST on future of PGHAC concluded that:

- The PGHAC has no longer significant role for HAC development since the format is stable, the increase use of the format is in the hand of sounder manufacturers
- Actual PGHAC chair Laurent BERGER will "keep an eye" on the format from WGFAST and the proposal is made that PGHAC would stop in 2009.

1 Terms of reference

The **Planning Group on the HAC Data Exchange Format** [PGHAC] (Chair: L. Berger, France) will continue to work by correspondence in 2009 to:

a) coordinate the further development of the HAC standard data exchange format;

b) provide information on the changes in the format and its evolution;

c) share information between manufacturers and users on the way acoustic data are processed and stored;

d) report on how the manufacturers, developers and users see the advantages and disadvantages of HAC and future goals.

If needed the group will meet during next WGFAST meeting in Ancona, Italy, in May 2009.

2 Development of HAC format (ToR a, b and c)

The format has remained unchanged in 2008 and 2009, updated version of CRR 278 "DESCRIPTION OF THE ICES HAC STANDARD DATA EXCHANGE FORMAT, VERSION 1.70" from October 2007 is available on request to PGHAC chair.

Main sounder manufacturers and post-processing software are, or are about to be, HAC compliant at least for the basic information needed in hydroacoustics (see also next paragraph for the use of the format).

3 Status report for use of HAC format within ICES community (ToR d)

A survey was conducted in May 2009 in order to report on how the manufacturers, developers and users see the advantages and disadvantages of HAC and future goals (form available in Annex 1)

12 responses were sent to PGHAC:

- 4: use the format as unique standard format for hydroacoustics database
- 2: use the format as an exchange format
- 6: do not use the format
    - 5: the format is recognized as a standard, they would use it if manufacturers are planning to really use it (provide complete HAC files with all relevant information for later post-processing)
    - 1: does not see the interest of a common format to maintain and prefers open source reader programs for existing formats

The results of this survey are discussed during WGFAST meeting in Ancona on 20 May, the discussions are summarized below:

- The format is a framework for sounder manufacturers and developers to provide all relevant information for proper use of acoustics in fishery hence enabling to evaluate echosounder performances.
- The format covers existing equipments used in fishery acoustics and has several advantages among which the ability to combine data from different equipments.

- The format is used as a unique format for national databases in several institutions.
- The increase use of the format by manufacturers is a key point which will make the format effectively a standard.
- Standard shared libraries for HAC reading and basic processing would also help dissemination.

The discussion then widen on the future of PGHAC and the need for a dedicated group for hydroacoustics format, WGFAST members agreed that:

- The format is stable, covers the needs of ICES community in acoustics and does not need new developments.
- The PGHAC has no longer significant role for HAC development, the increase use of the format is in the hand of sounder manufacturers.
- Laurent BERGER will “keep an eye” on the format from WGFAST and the proposal is made that PGHAC would stop in 2009.

Annex 1: HAC survey

Could you complete this form in order for PGHAC to report on the use of HAC format and future goals of this planning group. Please use the dedicated comments area to detail your responses if needed.

Your current use of HAC format

Have you ever used HAC format

- ☐ Yes, regularly as the standard format for fishery acoustics data
- ☐ Yes, occasionally, as a format for data exchange
- ☐ No

Comments:

In your opinion what are the main advantages of HAC format

- ☐ Standard format managed by experts including WGFAST members and representative of hardware and software manufacturers
- ☐ Versatile structure using tuples[1] allowing to code the information in extenso including calibration of equipments platform attitude and environmental parameters
- ☐ Ability to combine different echosounders in a single data file for simultaneous data acquisition and complementary processing (eg. single beam multifrequency with multibeam echosounder)

Comments:

In your opinion what are the main disadvantages of HAC format

- ☐ Complexity of the format for non-experts
- ☐ Diffusion of the format is not sufficient and standard library for HAC reading are not shared.
- ☐ Sounder manufacturer have their own proprietary format and double archiving is often needed
- ☐ Format is non standard enough as compared with self descriptive format as "netcdf" used in the scientific community

Comments:

1 A tuple is a labelled group of bytes encapsulating related information forming the basic structure of the HAC format

Your plan for the future

Do you plan to use HAC format in the future

- ☐ Yes, as a unique standard format for handling my hydroacoustics data
- ☐ Yes, as an exchange format, in order to make my data available for other software packages
- ☐ Yes, as a standard format hydroacoustic database in the framework of international research programs
- ☐ No

Comments:

What would help you in using HAC format

- ☐ Improved documentation with case of utilisation
- ☐ Increased use of the format by sounder manufacturers and international science programmes
- ☐ Ability of sounder manufacturers to provide complete HAC files with all relevant information for post-processing (eg transducer position and orientation)
- ☐ Standard shared libraries for HAC reading and basic processing

Comments:

Distribution

PGHAC members

WGFAST members

Sounder or Software Manufacturer:

Rene Chave	ASL Environmental Sciences Inc.
Bob McLure	BIOSONICS
Mei Sato	KAIJO SONIC CORPORATION
Didier Caute	MARPORT France
	FURUNO
Lars Nonboe Andersen	SIMRAD
Alain Pochat	SODENA
Ian HigginBottom	SONARDATA

Annex 2: Recommendations

RECOMMENDATION	FOR FOLLOW UP BY:
1.PGHAC will stop in 2009 and Laurent BERGER will remain the expert for this format in WGFAST	ICES Annual Science Conference