HYPACK
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Sounding Better!

CATZOC, eHydro, HYPACK and the Easy Button

By Mike Kalmbach

These are connected topics that (in the end) will provide USACE multibeam surveys with the highest accuracy classification available. USACE surveys now have a ridiculously low classification that is not true to the work they are doing. Connecting the title topics will change that.

Let's start with CATZOC, what is it? Google search!

"Category Zone of Confidence (CATZOC) values are assigned to geographical areas to indicate whether data meets a minimum set of criteria for position, depth accuracy and seafloor coverage. The Zone of Confidence (ZOC) value is dependent on the positional and depth accuracy of the survey."

https://www.admiralty.co.uk/news/blogs/category-zones-of-confidence

There are a number of ZOC classifications;

https://www.admiralty.co.uk/AdmiraltyDownloadMedia/Blog/CATZOC%20Table.pdf

The one of interest to USACE and HYPACK is A1; Full coverage with high accuracy position and depth measurements. NOAA is the US agency that assigns ZOC to surveys.

NOAA will access surveys and associated metadata via the eHydro repository.

"The U.S. Army Corps of Engineers developed eHydro to provide enterprise performance-based analyses and budgeting for coastal navigation channels through geospatial data to be used for, uniform method of data dissemination and comparison of latest conditions on coastal navigation channels."

https://www.swg.usace.army.mil/Missions/Navigation/Hydrographic-Surveys/

HYPACK fits in to provide an "Easy Button" that USACE offices can use to submit surveys and metadata to eHydro. The thought being that the surveys (of course) and metadata already exist in HYACK and it's an easy reformatting job. But when the words "easy" and "software" are combined, beware!

Here are some obstacles:

- **Metadata selection.** HYPACK has two metadata programs and at least one eHydro submission program. One with rigorous adherence to an obsolete metadata standard, another that is good but not well-suited to Easy Button and another developed specifically to specs of a USACE legend who has since retired. We can draw from these but none provide what is needed for A1 CATZOC certification.
- **Accuracy discussions.** A lot of time has been spent discussing accuracy. On one end USACE has minimum accuracy requirements published in their Engineering Manual. On another end are complex calculations as in the HYPACK TPU editor. On yet another end are USACE districts who do not believe their surveys are even appropriate for eHydro.

So we're trying to work all this out before the programming starts and we end up with another program that doesn't do what is needed. And we've worked out many things!

- **Seafloor feature detection.** USACE has always paid attention to features sounded in the channel above project depth. Of course; these present hazards to navigation. CATZOC (or NOAA or someone, I'm not sure who) wants to know about features detected at any depth. More USACE work is required for that, and since it's unfunded work, they are depending on HYPACK for some form of automatic detection. We (HYPACK) will take this as far as we can within reason.
- **Fitting into the work flow.** When all requirements are nailed down, and I think we're about there, we can work with project advocates and the district offices to implement the easy button.

HYPACK updates will include beta work in progress as available. It will all be fully functional no later than the HYPACK 2021 release.