

Hydrographic Surveyor interview questions

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What to expect

Hydrographic Surveyor interviews test both the technical side of acquisition and processing and the practical judgement you bring on a vessel. Employers want to know you can plan a survey properly, handle data QA without being prompted, and work safely alongside crews and clients.

- **Technical hydrographic:** Questions on multibeam and single beam systems, calibration, sound velocity, tide reduction, datums and IHO S-44 order requirements.
- **Data processing and QA:** How you clean, validate and deliver bathymetric data in CARIS, QINSy or HYPACK, and how you decide when a dataset is fit for purpose.
- **Safety and maritime compliance:** WHS obligations on a vessel, AMSA requirements, MSIC, sea survival and how you manage risk during offshore work.
- **Scenario and judgement:** What you would do when equipment fails, data looks wrong, weather turns, or a client pressures you to release an incomplete deliverable.
- **Behavioural:** Past examples of solving problems, working in small teams, managing stakeholders and learning from mistakes.
- **Client and stakeholder:** How you explain technical limitations, scope changes and survey uncertainty to port authorities, engineers and project managers.

Most processes start with a short phone or video screen with a survey manager or recruiter, then move to a technical interview with a senior surveyor or hydrographic team lead. Some employers add a practical exercise, such as a small dataset to process or a survey plan to review, and a second interview with the operations manager or client-facing lead. Vessel-based roles often include a site or vessel induction day before an offer is confirmed.

1. Walk me through how you plan and execute a multibeam survey from mobilisation to final deliverable.

Why they ask

This checks whether your process is real and repeatable, not just a list of software names. It also shows how you handle specifications, calibration and QA before delivery.

How to structure your answer

Use a chronological walk-through with decision points: specification and planning, mobilisation and calibration, acquisition, processing, QA and delivery. Name the acceptance criteria you work to at each stage and flag where you would stop and check before continuing.

Example answer

"I start with the specification. If it is an IHO S-44 order 1a channel survey, I set line spacing and vessel speed to suit the depth and swath, and I confirm the datum and tide reduction approach with the client before anyone mobilises. I build the survey plan in HYPACK with run lines, infill areas and a sound velocity cast schedule. On the vessel I run a patch test and calibration on the first line and log the results in the acquisition file. During acquisition I watch coverage, detectability and raw attitude data in real time so we are not leaving gaps that need a second mobilisation. Back in the office I process in CARIS HIPS and SIPS, apply sound velocity and tide corrections, clean the data and run the QA checks against the specification. I produce the fair sheet, DTM and survey report, and I would rather hold delivery for half a day to fix a coverage gap than send something the client has to question."

2. Tell me about a time you found an error in survey data after it had already gone to a client.

Why they ask

This probes integrity, your QA habits and how you handle a difficult conversation. Employers want surveyors who own a problem rather than quietly hoping nobody notices.

How to structure your answer

Use STAR. Set the situation and the deliverable, describe what you noticed and how you confirmed it, explain what you did about the client relationship, and finish with the result and what you changed in your process afterwards.

Example answer

"We had delivered a dredge pre-survey for a berth pocket and the client was using it to set cut levels. A few days later I was reviewing a separate dataset and noticed a consistent depth offset in one part of the earlier survey that lined up with a tide gauge change mid-campaign. I went back through the raw files, confirmed the correction had been applied with the wrong epoch for a section of the survey, and re-ran the processing. I told my project manager the same day and we contacted the client before they started dredging, explained the issue plainly, and issued a revised DTM and report within two days. The client appreciated that we came to them first, and we changed our tide reduction checklist so the gauge epoch is signed off before processing starts."

3. You are on a vessel and the multibeam data shows an unexpected shoal in a charted channel. What do you do?

Why they ask

This is a judgement and safety question. It tests whether you verify before you alarm, and whether you understand the operational consequences of a wrong call in a navigable channel.

How to structure your answer

Work through it in order of risk: verify the data, isolate the cause, decide what needs to happen on the vessel, notify the right people, then document it. Keep the answer calm and specific.

Example answer

"First I would not trust a single line. I would ask the helmsman to run an infill line over the same area at a slower speed, and check whether the shoal appears in the raw data or only after correction. I would look at the sound velocity profile, the tide correction, and the attitude data for any sign of a motion sensor issue or a bad cast. If the shoal holds up on the repeat line, I would tell the party chief immediately so the vessel can stay clear and the client can be notified, because a charted channel with an uncharted shoal is a navigation risk. I would capture the raw files, note the position against the chart datum, and include the shoal in the survey report with the supporting lines. If it turned out to be a sound velocity artefact, I would still document the check so the QA record shows why we ruled it out."

4. How do you handle sound velocity corrections and tide reduction in your processing?

Why they ask

These are the corrections that decide whether your depths are defensible. The interviewer is checking that you understand the physics and the workflow, not just which button to press.

How to structure your answer

Explain the principle first, then your method, then give a concrete example of a time the correction changed the result. Finish with how you document it for the QA record.

Example answer

"Sound velocity affects how the beam travels through the water column, so if the profile is wrong the outer beams bend and you get depth errors that grow with angle. I take casts at the start and end of each day and more often if the water mass is changing, and I apply them in CARIS with the time and position stamped so the correction is traceable. Tide reduction is separate: I confirm the gauge and

the datum with the client, apply the predicted or observed tide, and check the crossover lines between adjacent runs. On one survey the outer beam depths were consistently shallow against the cross lines, and it traced back to a cast taken in a different water mass in the morning. Re-casting mid-afternoon and reprocessing fixed it, and I now schedule an extra cast whenever the run crosses a known front or a river mouth."

5. How do you manage WHS and maritime compliance during a survey campaign?

Why they ask

Offshore and coastal work carries real risk, and employers need to know you will not cut corners when the schedule tightens. It also shows whether you understand the Australian regulatory environment.

How to structure your answer

Set out the framework you work within, then your personal routine on a vessel, then a specific example where you applied it. Keep it practical rather than policy-speak.

Example answer

"Every campaign starts with the vessel's safety management system, the AMSA requirements that apply to that vessel, and a project risk assessment covering the specific site, weather limits and diving or small boat operations if they are involved. I hold an MSIC and current sea survival and first aid training, and I make sure my own certificates are current before mobilisation. On board, I do the induction, know where the life jackets and immersion suits are, and follow the master's authority on weather and sea state even when the survey plan says otherwise. On one campaign the forecast was marginal for the exposed part of the site, so we ran the sheltered lines first and returned to the exposed area later in the week. We still delivered on time, and nobody had to make a call under pressure at sea."

6. Describe a time you had to explain a technical limitation or uncertainty to a client.

Why they ask

Hydrographic data is never perfect, and clients often want a simple answer. This question tests whether you can be honest about uncertainty without losing their confidence.

How to structure your answer

Use STAR, but spend most of your answer on the conversation itself: what the client wanted, how you framed the limitation, what you offered instead, and how it landed. Finish with the outcome and the relationship afterwards.

Example answer

"We were surveying a berth pocket where the client wanted a single depth figure for dredge planning. The data showed a soft seabed layer that the multibeam picked up differently from the historical chart, so there was a real range rather than one number. I sat down with their project engineer, showed them the raw data and the two interpretations side by side, and explained why the difference mattered for their cut levels. Rather than just saying the data was uncertain, I offered a targeted infill survey with a different frequency to firm up the layer boundary, and we agreed to flag the area in the report. They used the flagged zone for their risk allowance and the dredge ran without a claim on that section. Being straight about the limitation was what kept their trust."