



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Caring for your natural resources... now and forever

Professional Dive Safety Conference

April 7-8, 2014



Washington Department of Natural Resources Compliance Dive Program Review



Safety Conference Discussion

- WDNR compliance dive team operations
- Objectives of dive program review
- Professional Diving Advisory Council (PDAC)
- Industry standards & regulations
- Dive Program Review:
 1. Assessment process
 2. Recommendations
 3. Outcomes, benefits of a review
- Set the Baseline – Common Ground

The background of the slide features a photograph of three divers in a boat. One diver in the center is wearing a black wetsuit and a black cap, looking towards the camera. Two other divers, wearing red and black wetsuits, are positioned on either side of the central diver, looking down at something in their hands. The boat's interior and the water are visible in the background.

SAFETY IS A REQUIREMENT FOR PROFESSIONAL DIVE OPERATIONS

1. Safety and human nature, we are risk takers...
2. Example 1: Do you always wear your PPE, PFD, ear, eye, & foot protection?
3. Example 2: Have you ever texted while driving?
4. Example 3: Pre-flight briefing: “In the unlikely event of...”
5. People, especially divers are heroic. Being heroic appeals to our human nature. Planning does not.

Diving Accidents

When can we affect the outcome of an accident?

Before it happens:

1. Hazard analysis
2. Planning
3. training





Normalized Deviation

Doing something the wrong way repeatedly until it becomes the new normal.

Eventually it feels like the right way.

No. 1 Deficiency in Unit : Underwater Safe Practices Manual

DENIAL

- That every team member is familiar with SPM – management included
- Regular review of the SPM
- SPM is revised as needed
- Training is based on SPM

No. 1 Symptom of a Diving Accident

DENIAL



Denial

- Diver in a jam: “I can get myself out of this.”
- Small aches: “No one needs to know about this. I have a job to finish.”
- Competence: “I really don’t know how to do this but I can figure it out.”
- SCUBA diving: “I’m just about out of air but I’ll be fine to finish the job.”



DNR Diving Operations

Dive Mode:

- Scuba

Platform:

- Boats

Operations:

- Compliance
- Survey
- Sampling
- Water quality /
biotoxicity



DNR Diving Operations

Pre-Harvest Sampling





Diving Program Review Objectives

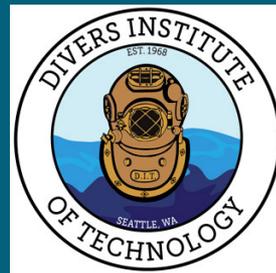
- **Outside objective look by Qualified Personnel**
- **Review Current Dive Program**
- **Cooperation & Collaboration with dive team & management**

Diving Program Review Objectives (ctd.)

- **Raise the bar on Safety**
- **Ensure DNR Program meets latest, recognized Safe Diving Practices & Procedures for the Diving Industry**

Professional Diving Advisory Council (PDAC) Formed

- Dennis Lucia, Diving Superintendent, *Nisqually Marine Services*
- John Paul Johnston, Executive Director, *Divers Institute of Technology*
- Frank LaQue, USN Master Diver (Ret.); Director of Training, *Divers Institute of Technology*
- Boy Kayona, USN Master Diver (Ret.); Paramedic, *Independent Diving Consultant*
- Steve Urick, Diving Safety Officer, NOAA



Purpose of PDAC



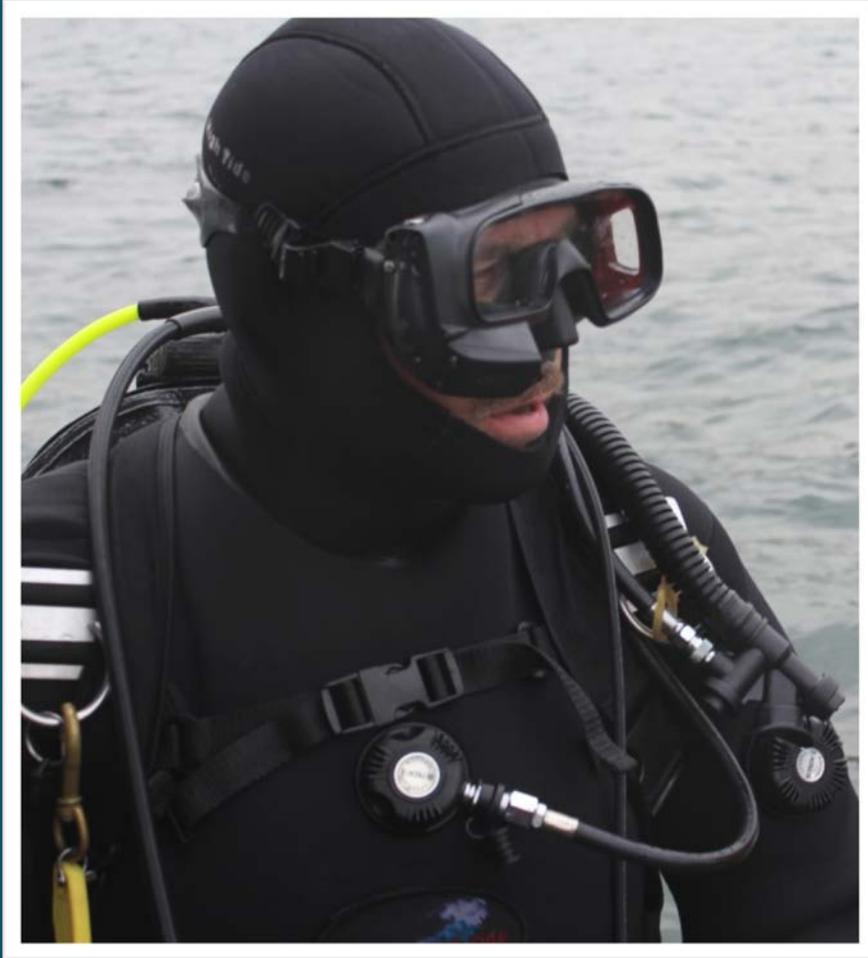
- PDAC was NOT investigating the accident
- WDNR requested a complete review of the WDNR Aquatic Resources Division by a team of professional diving experts.
- Very comprehensive review; One PDAC member embedded with DNR dive team (7 months).
- PDAC provided recommendations

Standards & Regulations

- DNR scope encompasses scientific, commercial and compliance diving, but same safety applies
- Review was based on cross-discipline recognized industry Standards & Regulations
- Brought current safe practices of commercial industry but used local standards & regulations
 - OSHA
 - USCG
 - Public safety
 - WISHA



PDAC Assessment Process



- Safety checklist
- Training
- Maintenance program
- Personnel / Manning/ Chain of Command
- Diver-worn Gear/Equipment
- Operations SSA / SCUBA
- Facilities

Safety Checklists

- From Naval Safety Center
- Tailored to fit DNR
- Areas covered on checklist:
 - ✓ Administration
 - ✓ Air Systems and Stowage
 - ✓ HazMat
 - ✓ KM-37, SCUBA, FFM
 - ✓ Training



Training

- Training program designed and executed with two objectives:
 - Immediate Diver Training
 - Long-Range Diver Training Plan
- Classroom and Practical:
 - Physics / Medicine Review
 - Diver Casualty Drills / Emergency Procedures
 - Pool Dives / Open Water Dives



Maintenance

- DNR maintenance schedule was thoroughly reviewed
- Recommendations were made for areas of improvement:
 - All equipment was identified and placed on maintenance schedule
 - In-House vs. Authorized Vendors
 - Technician Qualifications



Personnel / Manning / Chain of Command

- Prior Manning Levels
- Team / Individual Responsibilities
- Qualifications / Certifications / Training
- Management / Leadership
 - Management & Dive Team Integration



Equipment

Dive Equipment

- Condition
- Maintenance
- Suitable for the job

Dive Boats

- Diver egress
- Boat equipage
- Suitable for the job



Facilities

- Adequate to support Diving Operations
 - Life Support Equipment Maintenance and Repair Area
 - H.P. Air Compressor and Charging System
 - Health and Comfort
 - Vehicle and Vessel Support
 - Administrative and IT Support



Outcomes



- ❖ New Leadership and Team Responsibilities
- ❖ Increased Manning Levels
- ❖ Safe Practices Manual Revision
- ❖ New Equipment
- ❖ Changes in Company Policies
- ❖ Operations in line with Industry Standards
- ❖ Lessons Learned with overall benefit to the industry

Overall Safer Diving Operations

Benefits of Peer Verification

A neutral third-party or peer verification of programs & procedures is beneficial because:

- We get complacent & overlook what we see everyday
- Useful to all sectors of industry
- Peer review—people in equivalent job descriptions comparing standards / policies



Who is Qualified to Perform a Diving Safety Survey?



Subject Matter Experts
with Related Diving
Experience

- Senior Divers / Supervisors
- Commercial Dive Educators
- Prior Military Diving Experience

Benefits of a Diving Program Review

- Constant state of evolution in everything we do: Adapt, change, grow, move forward
- Share new technologies, perspectives
- Changes in legislation (NOSAC)
- New equipment
- Lessons learned from industry
- May lead to procedural / policy changes (two-way)



Common Factors Causing Gradual Erosion Within Our Safe Practices



- **Complacency in:**
 - **Operational Procedure and Checklists**
 - **Maintenance**
 - **Qualifications**
 - **Job Safety and Hazards Analysis (JSA / JHA)**
- **Legislation (Varied by Region)**
- **Safe Practices Manual (Organization Specific)**

Summary

- DNR commitment made for a successful review
- Input from all levels
- Helped define a more realistic mission scope
- Established a new baseline for safer diving operations





- ❖ Hazards are present in everything we do and are different at every job site.
- ❖ Safety must be our focus before, throughout, and after every job.