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## *Appendix IV*

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## Z-Drive Population in the U.S. Oceanographic Fleet

<i>Knorr, Melville</i>	3 each
<i>Thompson, Revelle, Atlantis, Brown</i>	2 each
TAGS 60, 61, 62, 63, 64, 65	3 each

## Failures to Date

	<u>Probable Cause</u>
<i>Thompson</i> - lower units (Port and Starboard)	Manufacture/Grounding
<i>Melville</i> - lower unit	Manufacture
<i>Knorr</i> - lower - Port (Derated to 70% torque by ABS)	Unknown
<i>Thompson</i> - upper gear box	Unknown

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## **Plan of Action**

- **Analysis of failures to date.**
  - ◇ NAVSEA funding.
  - ◇ Scripps (Tom Althouse) lead; WHOI, UW assist.
  - ◇ Team to witness removal of *Thompson* and *Knorr* gears, conduct metallurgic analysis.
  
- **Possible Outcome**
  - ◇ Design problem (worst case) - seek Navy/NAVSEA assist in resolution.
  - ◇ One off manufacturing defects - pursue recourse with LIPS with ONR and NAVSEA backing.
  - ◇ No common cause/failure mode - review sparing provisions

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## *Appendix V*

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