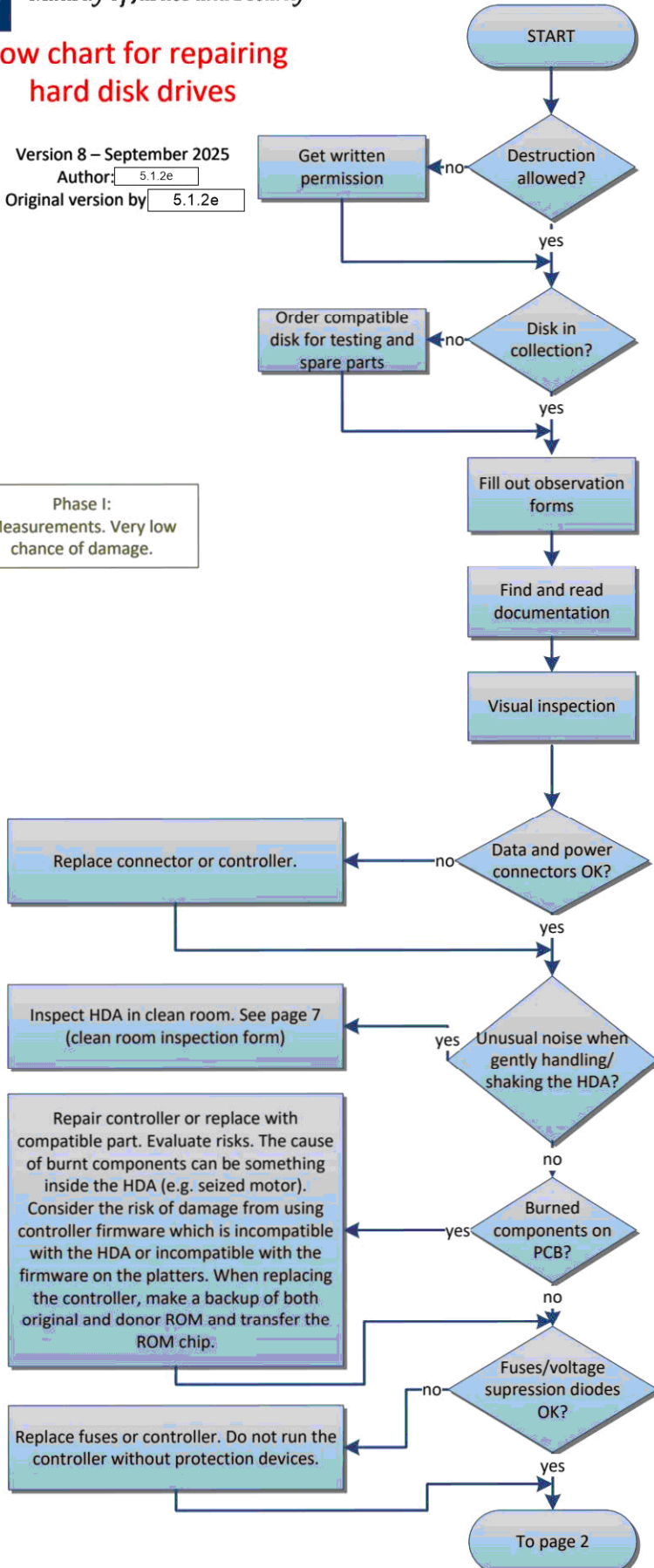




Flow chart for repairing hard disk drives

Version 8 – September 2025
Author: 5.1.2e
Original version by 5.1.2e

Phase I:
Measurements. Very low
chance of damage.



Case Details:

Case number:

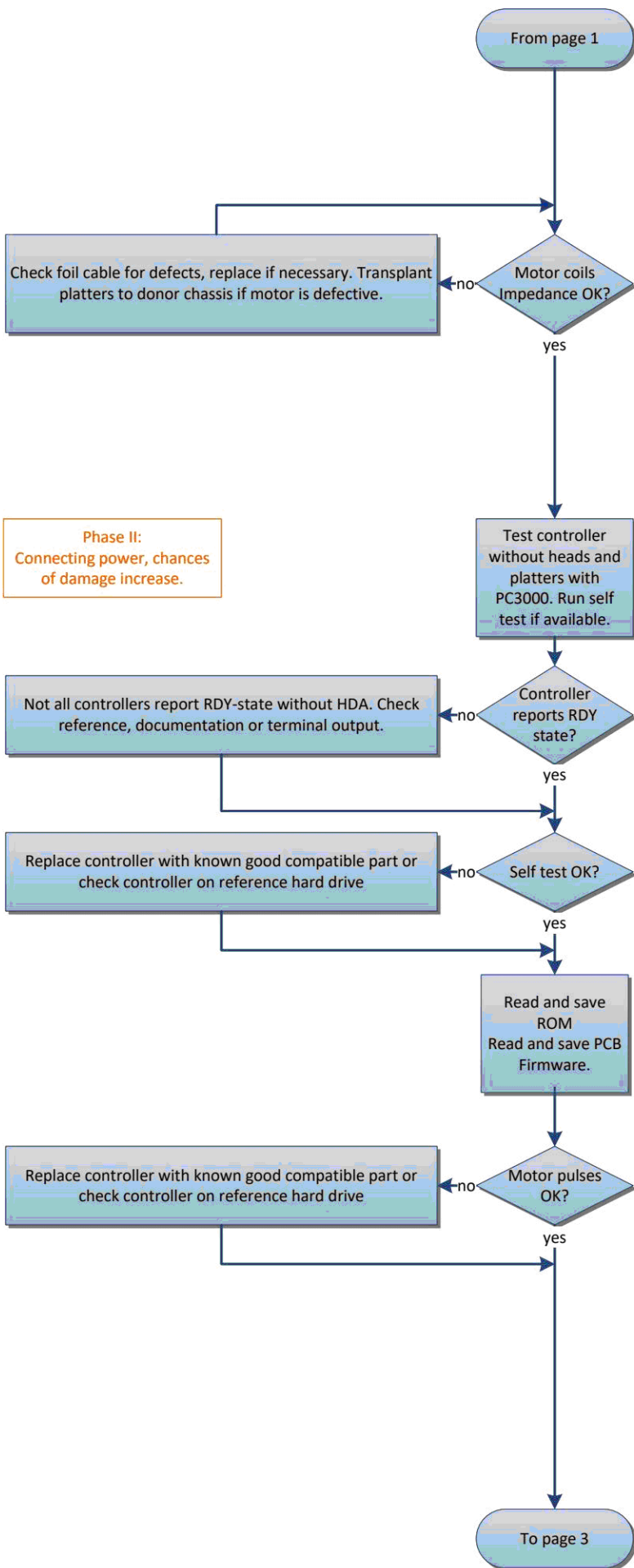
SIN:

Examinor(s):

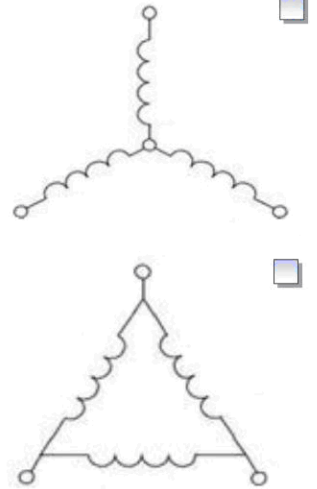
Hard drive model:

Date:

Initials:

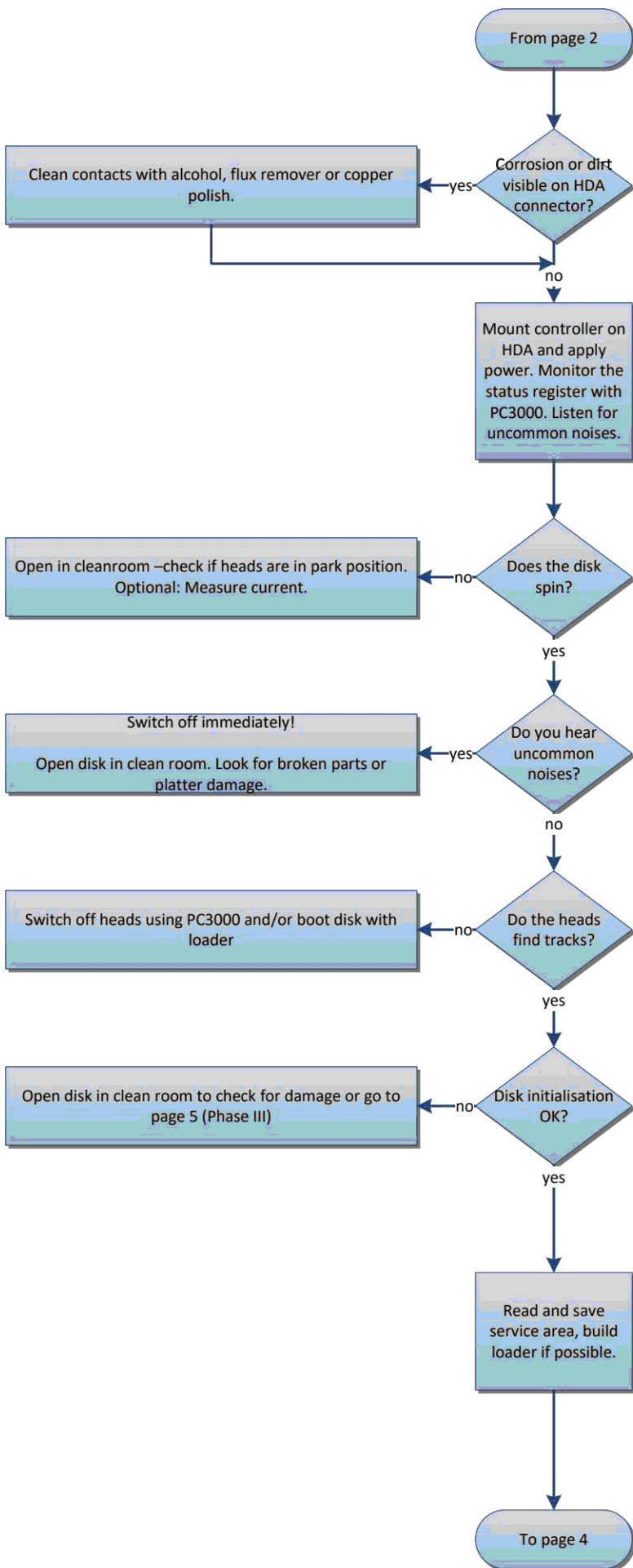


Remove PCB. Measure impedance of motor coils. Indicate whether a star topology or delta topology is used. Draw the motor connection points and indicate test points.



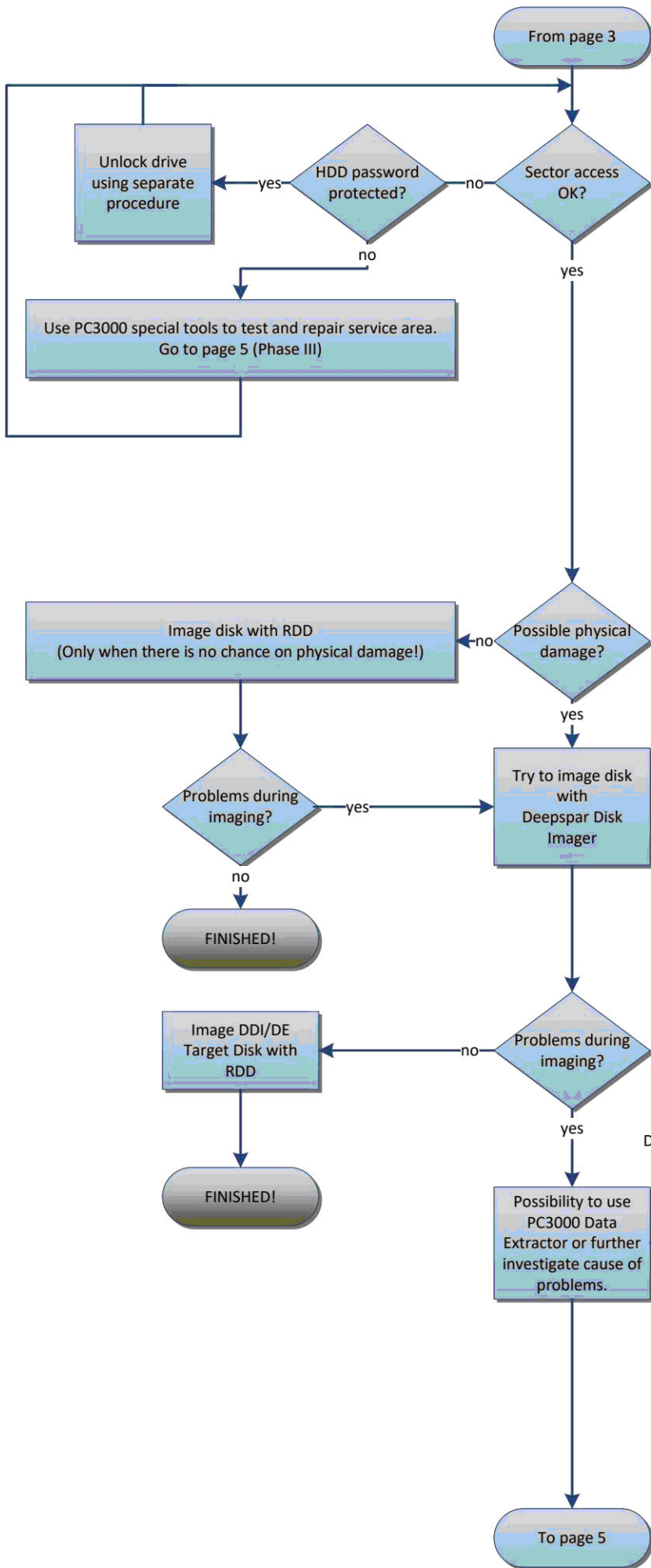
Phase II:
Connecting power, chances
of damage increase.

Measure DC voltage on motor connection points.
Test reference controller first, some disks disable motor driver when in PCB only mode.



The sound can be very faint. Calibration can take longer when using donor or damaged heads.

☐	Disk returns RDY state
☐	Drive ID OK
☐	Drive capacity correct
Drive capacity in LBA:	



Use tools → Sector Edit. Remember to switch the Sector Edit Tool in Read Only Mode!

Save read sectors in profile directory!

Sectors read with PC3000:

LBA 0	ok?	☐
LBA 1	ok?	☐
LBA 63	ok?	☐
LBA 2048	ok?	☐
LBA	ok?	☐
LBA	ok?	☐
LBA	ok?	☐

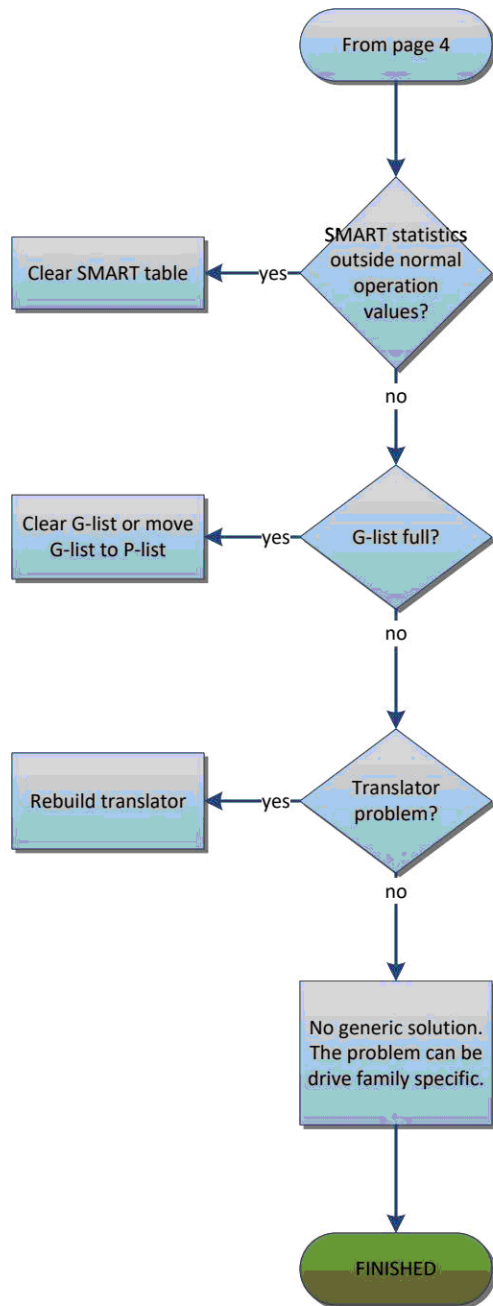
Deepspare Disk Imager version:

RDD version:

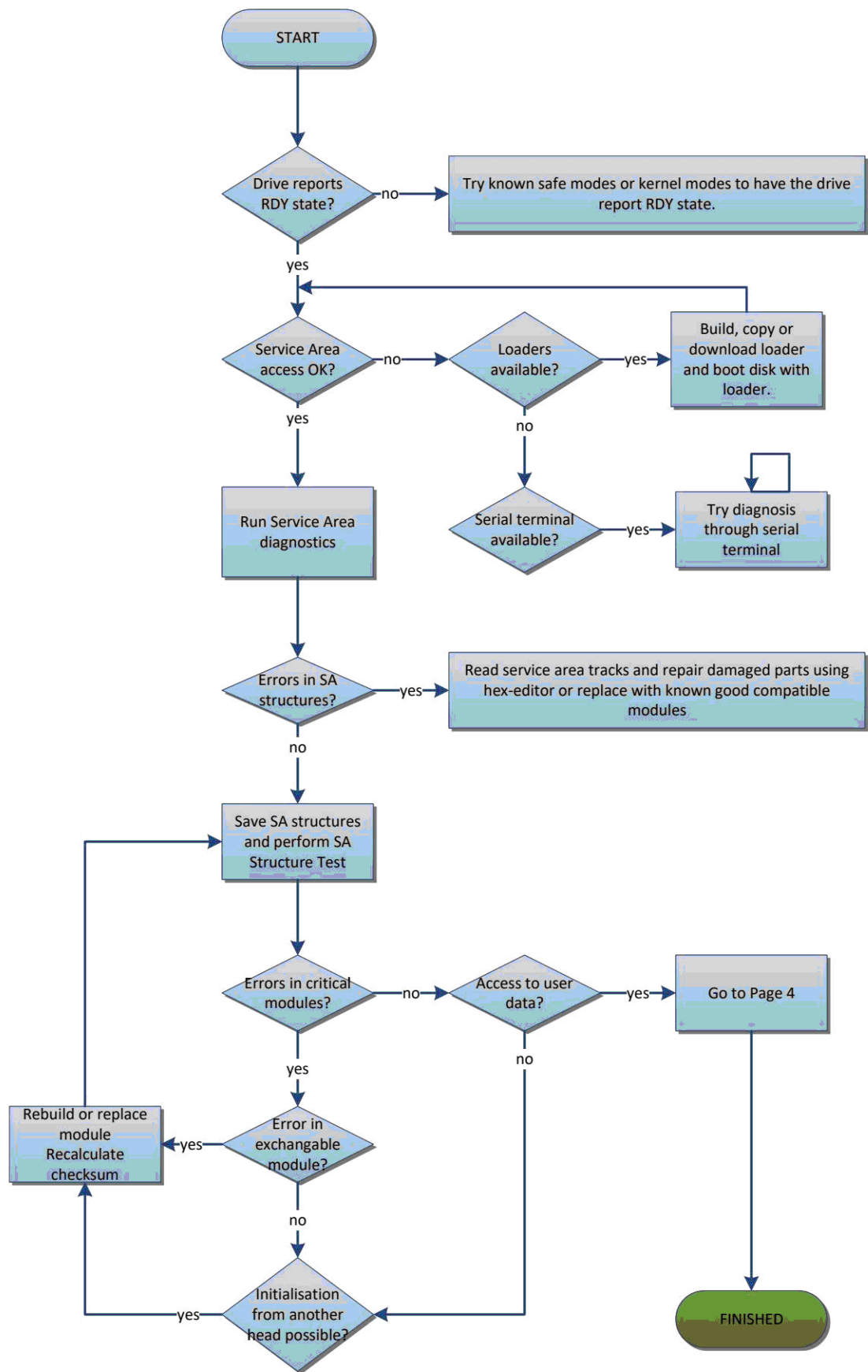
Imaging workstation:

Target Disk:

Phase III:
The following actions involve
a high risk. The steps
themselves are common, the
actions to perform them are
not. Use the PC3000 manual
and determine the risks.



Phase IV:
Use PC3000 tools to test and repair the service area.
This part is highly experimental and all actions shown should first be tested on a reference hard disk drive. The decisions and actions here are very drive specific and might cause problems. Some options like hot swapping a compatible controller are available in more or less every stage of this flow chart.





Clean room inspection form

Version 1 – May 2018

Author: 5.1.2e

Part of Flow chart for repairing hard disk drives

Reason for opening disk in clean room:

Exhibit marks

- ☐ Filter orientation
- ☐ Voice coil magnet
- ☐ Head stack

Mark position of lid screws:



Heads in park position?

☐ yes ☐ no

Rotate platter (in spin direction only!) to break heads loose from disk surface. Push heads to parking position. Use headstack replacement tool when available. Check for any damage or dirt on landing spot.

Loading ramp OK?

☐ yes ☐ no

Replace ramp. Check head condition and platter position!

No damage/scratches visible on platter?

☐ yes ☐ no

Physically remove head if possible.

No dirt/debris on platter surface?

☐ yes ☐ no

Clean platters with very soft cloth or soft brush (Experimental). Use filtered compressed air or nitrogen to clean light dirt particles from platter surface. Secure the filter!

Heads OK?

☐ yes ☐ no

Check if all heads are correctly mounted on the head stack assembly. When heads are missing, check HDA seal. Replace head stack and check for platter damage.

Platter height OK?

☐ yes ☐ no

Check platter height relative to the air ducts, ramp and head stack assembly.

Motor bearing OK?

☐ yes ☐ no

Rotate the platter one full rotation(in spin direction only!). Check for any runout or rubbing spots. Listen for unusual noise. Light bearing noise is normal.

Conclusion:

Initials: