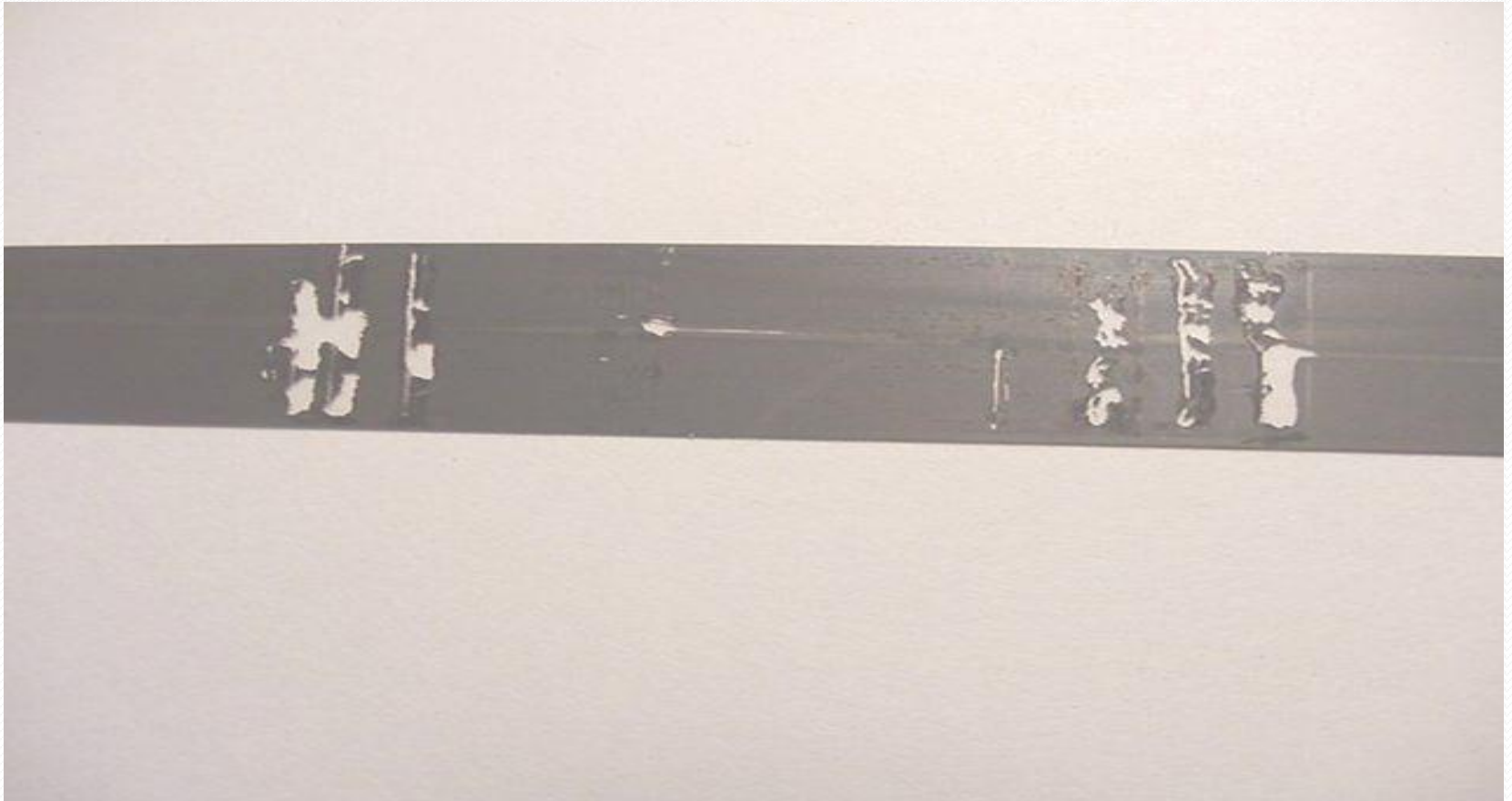


## Problems observed with MIRA-1000 type magnetic tapes

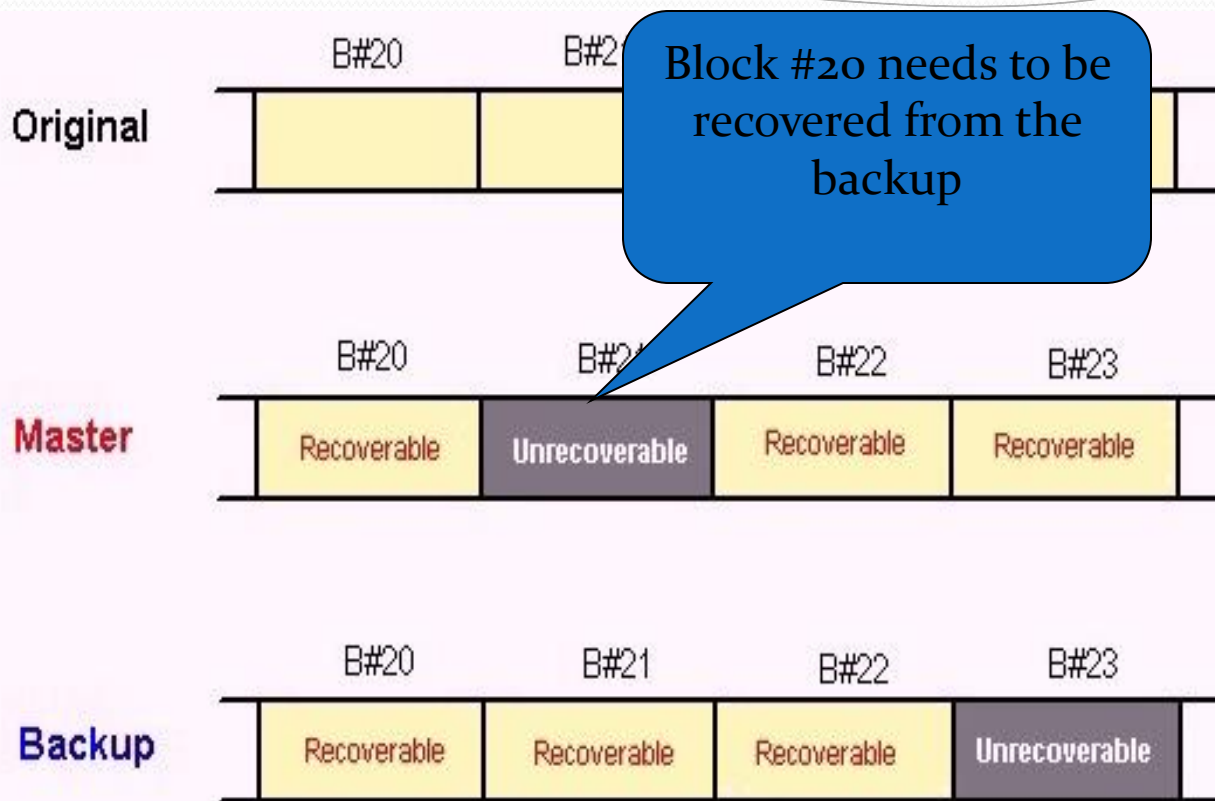
- Severe stiction causing frequent tape drive faults.
- Material deposits on a drive head and/or tape cleaner, sometimes removable.
- Holes occurred in the tapes because of coating pullout.
- Stretched and wrinkled tape resulting from the tape having stuck previously in a tape drive.

## Severe Stiction effect, tapes peeled from Magnetic Heads



## Why Stiction can occur in some tapes?

- In contact with water, Polyurethane binder undergoes hydrolysis, higher temperatures accelerate the reaction
- Lower molecular weight polymers formed, cause the tape coatings to become sticky
- Polyurethane hydrolysis can be temporarily partially reversed by heating a tape at a relatively low temperature for several days.



Merge **Master** and **Backup** to get complete blocks of data for Block# (20-23)

## How to minimize Data loss?

- Use certified media to archive electronic information.
- Allow for incoming media to acclimatize for a minimum of 24 hours before attempting to process.
- Archive tapes in controlled environment. Temp 66-68 F and 30-35% humidity.
- Rewind/retention all media types.
- Migrate E-records from legacy media formats to newer formats.

## NASA Recovery work on images from Lunar Orbiter tapes

- [http://www.nextgov.com/cio-briefing/2013/12/nasas-original-lunar-images-are-housed-former-mcdonalds/75677/?oref=nextgov\\_today\\_nl](http://www.nextgov.com/cio-briefing/2013/12/nasas-original-lunar-images-are-housed-former-mcdonalds/75677/?oref=nextgov_today_nl)