

Documentation for **QuickFiber** Output Files

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This documents describes the format of the files generated by the **QuickFiber** software.

1 Important definitions

Taken from <https://desi.lbl.gov/trac/wiki/Pipeline/FormatsAndNumbering>

- **Tile:** pre-defined locations on the sky. Tiles are pre-defined with a 6-digit ID. 900000 and above are reserved for calibration, commissioning, test, ancillary, and other non-DESI key project tiles, which may not even appear in a DESI tile list.
- **Pointing:** A specific selection of targets within a tile indicating both a pointing of the telescope and the fiber positioners.

This means that a tile may be observed multiple times with different pointings. A pointing may be observed multiple times with different exposures. If even one target changes or any target:fiber mapping changes it becomes a new pointing. A slightly different positioner location of the same targets on the same fibers is the same pointing.

2 **QuickFiber** outputs

The principal outputs of **QuickFiber** are

- **PotentialFiberMap.** The set of targets that can be reached by a set of fibers in a tile.
- **FiberMap.** This is a pointing defining which targets are on which fiber.

The previous two items will be stored in separate files for each tile and pointing. This means that two different assignment algorithms running on the same tile producing different pointings will store the results in different files.

3 QuickFiber output file naming convention

Primary output files from QuickFiber will follow the naming scheme

`QuickFiber.TTTTTT.PPPPPPPPPPPP.fits`

where TTTTTT is the 6-digit Tile ID and PPPPPPPPPPPP is a 12-digit pointing ID. The pointing ID is hash value computed by adding the IDs of all the targets in the pointing.

4 Output file data-structure

PotentialFiberMap contains the following information

- fiber: [0-4999]
- ntargets: [0-] Number of targets that can be reached by each fiber.
- targetid: unique target identifier to get back to target selection info. This contains all the targets that can be reached by a fiber. This concatenates the sets of available targets for each fiber.

FiberMap contains the following information¹

- fiber: [0-4999]
- positioner: [0-4999]
- objtype: ELG, LRG, QSO, SKY, STDSTAR, GAL, OTHER
- targetid: unique target identifier to get back to target selection info
- desi_target0: 64 bit mask of targeting info
- ra: degrees [0-360]
- dec: degrees [-90 - +90]
- xfocal: mm from center in positioner coordinate system
- yfocal: mm from center in positioner coordinate system

¹First defined in <https://desi.lbl.gov/trac/wiki/Pipeline/FormatsAndNumbering>.