

# Chapter 1

## Outer Tracker Quantity Estimates

This document illustrates the estimates for the quantity of OT modules and FE Electronics boxes on which the purchase of detector components (panels, FT boards, wire locators etc.) has been based.

### 1.1 Detector Modules

Concerning detector modules, the following assumptions will be made:

- 3 identical OT Stations will be constructed;
- each OT Station consists of four (XUVX) identical layers, differing only in the orientation of the modules;
- each layer consists of:
  - 14 “F” modules
  - 2 “SU<sub>1</sub>” modules
  - 2 “SL<sub>1</sub>” modules
  - 1 “SU<sub>2</sub>” modules
  - 1 “SL<sub>2</sub>” modules
  - 1 “SU<sub>3</sub>” modules
  - 1 “SL<sub>3</sub>” modules
- each F module has two layers of 64 drift tubes, staggered in  $z$  by half a cell diameter. Each drift tube, along  $y$ , consists of two pieces of straw, readout at  $y = -y_{MAX}$  and  $y = +y_{MAX}$ , respectively;

- each  $SU_1, SL_1, SU_2, SL_2$  module has two layers of 64 drift tubes, staggered in  $z$  by half a diameter. Each drift tube consists of a single straw readout at the end further from the beamp-pipe.
- each  $SU_3, SL_2$  module has two layers of 32 drift tubes, staggered in  $z$  by half a diameter. Each drift tube consists of a single straw readout at the end further from the beamp-pipe.

Consequently, in the rest of the document we will assume that the number of modules of each type to be built is as listed in Table 1.1.

Type	Number	Spare	Total	Super-Total
F	168	17	185	200
$SU_1$	24	3	27	30
$SL_1$	24	3	27	30
$SU_2$	12	2	14	16
$SL_2$	12	2	14	16
$SU_3$	12	2	14	16
$SL_3$	12	2	14	16

Table 1.1: Number of modules to be built for the construction of three track seeding stations. Numbers include 10% spare modules. Super-Total includes "waste" production.

## 1.2 Front-End Electronics

For what concerns the FE Electronics, we will assume the number of FE Box of each type to be built is as listed in Table 1.2.

Module	FE Box	Qy/Mod.	No Mod.	Qy
F	F	2	168	336
$SU_1$	F	1	24	24
$SL_1$	F	1	24	24
$SU_2$	F	1	12	12
$SL_2$	F	1	12	12
$SU_3$	H	1	12	12
$SL_3$	H	1	12	12

Table 1.2: Number of FE Boxes to be built for the construction of three track seeding stations.

The total number of FE Boxes to be built is summarized in Table 1.3.

FE Box	Qty	Spares	Total	Super-Total
F	408	42	450	475
H	24	6	30	32

Table 1.3: Total Number of FE Boxes to be built. Numbers include 10% spare boxes. Super-Total includes "wastes".

# Bibliography

- [1] CERN/LHCC 2001-024, LHCb TDR 6, 14 September 2001.