Chapter 9

Logistics and Cost Estimates

The Gran Sasso Laboratories of the Italian National Institute of Nuclear Physics are dedicated to experiments in nuclear, subnuclear and astroparticle physics which need an efficient protection against cosmic radiation. A 10.4 Km long double highway tunnel goes through the Gran Sasso massif, in the central part of Italy; the laboratories have been excavated at about 6 km from the SW entrance and 4 km from NE one. They consist of three main hall (which are conventionally named A, B and C) and of service and safety tunnels see Fig. 9.1.

The total volume is about 180000 m^3, one half is dedicated to the experimental activity. The floor of the experimental halls is 963 m above sea level oriented on a geodedic (308^o 50') passing through CERN. INFN has a very ambitious programme of excavating two new halls underground and indipendent access tunnel.

Table 9.1 shows a first attempt to estimate the cost of the $NO\nu E$ detector. It is referred to the basic single PMT readout of the calorimeter. The high granularity readout option (see sect 3.4.1) implies an additional cost of $ 8.0M dollars.

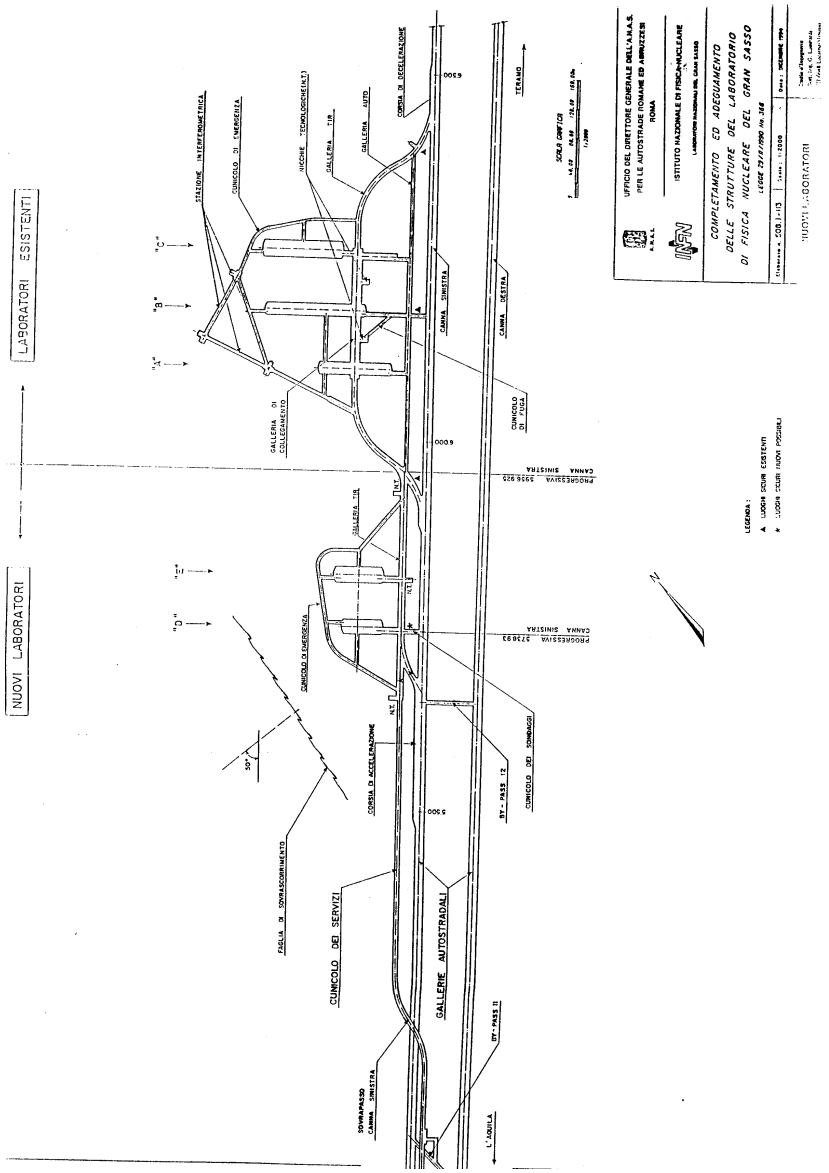

Figure 9.1: General layout of the Gran Sasso laboratories

Item	Quantity 1kT	Quantity 4kT	Cost ($)	Cost 1kT ($)	Cost 4+2kT ($)
Fibers	5677.32	22709.28	625	3548325	1.4193e+07
Single PMTs	4048	16192	125	506000	2.0240e+06
S.T./ RPC	1012	4048	625	632500	2.5300e+06
Strips	12144	48576	13	157872	6.3149e+05
HV PMT	2024	8096	62	125488	5.0195e+05
HV S.T./ RPC	101.2	404.8	125	12650	50600
Absorber	769.12	3076.48	38	29226.56	1.1691e+05
Iron boxes	506	2024	362	183172	7.3269e+05
ADC+TDC	4048	16192	125	506000	2.0240e+06
VME crates	10	40	6250	62500	2.5000e+05
Connectors	61124	244500	1.25	76405	3.0562e+05
Cables	152812	611248	0.7	106968.4	4.2787e+05
S.T./ RPC elect.	2024	8096	31	62744	2.5098e+05
Gas system					6.2500e+05
Meccanics					6.2500e+05
Data acq.					5.0000e+05
Muon modules					9.6125e+05
Anticoinci. frame					1.2481e+06
Total					**2.800e+07**
Multianode PMTs	3000	12000	900	2700000	1.0800e+07

Table 9.1: