



VST Project

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Integration at Paranal

Progress Plan

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	Name	Date
Prepared by	M. Brescia	November 09, 2007



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Revisions

Issue	Author	Date	Section/Paragraph Affected	Reason/Initiation/ Documents/Remarks
1.0	M. Brescia	09/11/2007	All	First issue



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1 Reference/Exchanged Documents

REF. ID	TITLE/CODE	DATE	AUTHOR / REL. PEOPLE	COMMENTS
REF. 1	Integration Schedule	25.07.2007	G. Ihle, M. Brescia	Schedule
REF. 2	VST-AIV_activity_Paranal_period1.pdf	31.08.2007	M. Brescia	Summary Report
REF. 3	VST-AIV_activity_Paranal_period2.pdf	14/09/2007	M. Brescia	Summary Report
REF. 4	VST-AIV_activity_Paranal_period3.pdf	16/10/2007	M. Brescia	Summary Report
REF. 5	VST-AIV_activity_Paranal_period4.pdf	26/10/2007	M. Brescia	Summary Report
REF. 6	VST-AIV_activity_Paranal_period5.pdf	09/11/2007	M. Brescia	Summary Report
REF. 7	INAF_Integration_budget_info.pdf	25/07/2007	M. Brescia	budget plan
REF. 8	INAF_Integration_manpower_info.pdf	25/07/2007	M. Brescia	man power plan

Tab. 1 – Referenced / Exchanged Documents

2 Abbreviations and Acronyms

A & A	Meaning
AIV	Assembly Integration & Verification
AZ/ALT	Azimuth/Altitude axes
EIE	European Industrial Engineering
ESO	European Southern Observatory
HBS	Hydrostatic Bearing System
INAF	Istituto Nazionale di Astrofisica
LCU	Local Control Unit
M1	Main Mirror
TCS	Telescope Control Software
VLT	Very Large Telescope
VST	VLT Survey Telescope

Tab. 2 – Abbreviations and acronyms






3 Introduction

The present document is the progress plan of all integration activities foreseen at Paranal. It takes into account previous schedule, man power, cost estimation and activities done until November 9 (see reference documents). It is foreseen a final review of this plan after the last work shift already included in the past integration plan (November 12-22, 2007).

4 Pending Activities

The following schemes show the main pending activities to be carried out in the next planned periods. The schemes do not include yet all final mechanical alignments and telescope combined functional and performance tests on AZ/ALT system. They will be included in the next review of this document.

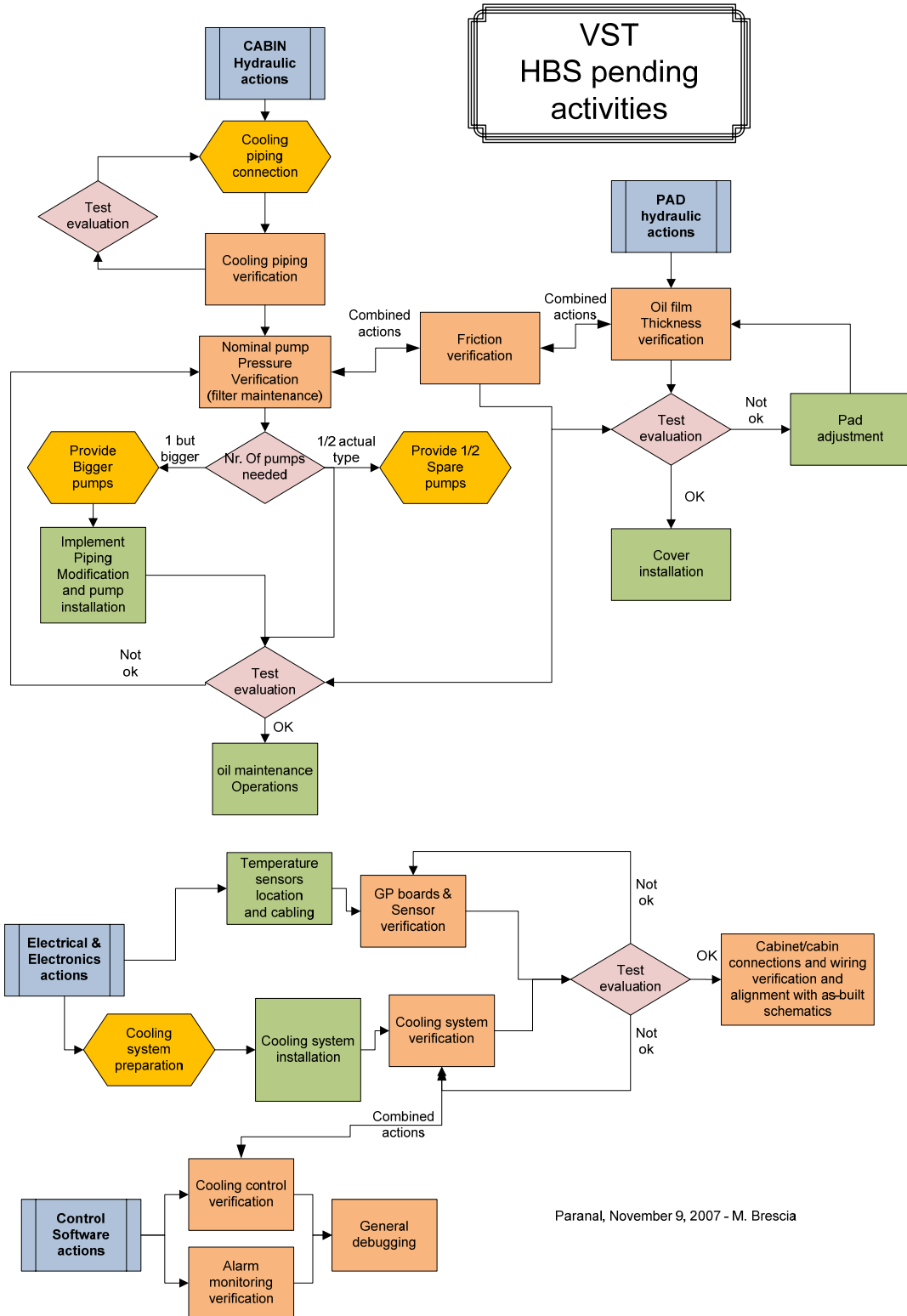
LEGENDA

SYMBOL	DESCRIPTION
	activity that can include procurement/purchase/design/construction/development (it is basically referred to systems not yet available on site)
	activity that includes verification and test
	activity referred to practical action or group of actions
	test or verification evaluation point
	referred to mechanics, software or electronics activity subsystem

NOTE: in the following diagrams, groups of linked activities can be done in parallel.

4.1 HBS system

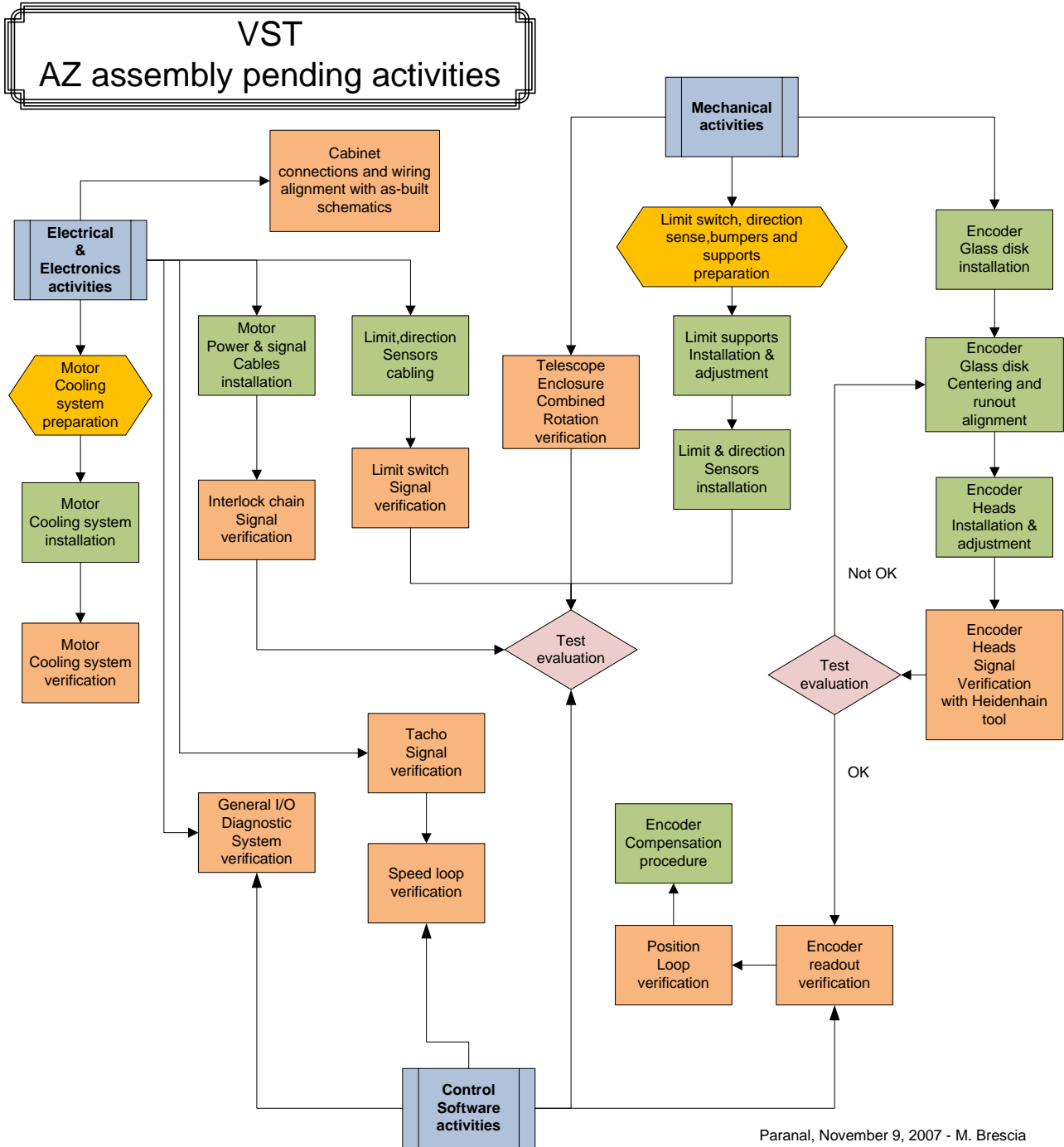
The following diagram is the logical scheme of all pending activities to be done for the HBS system.



Paranal, November 9, 2007 - M. Brescia

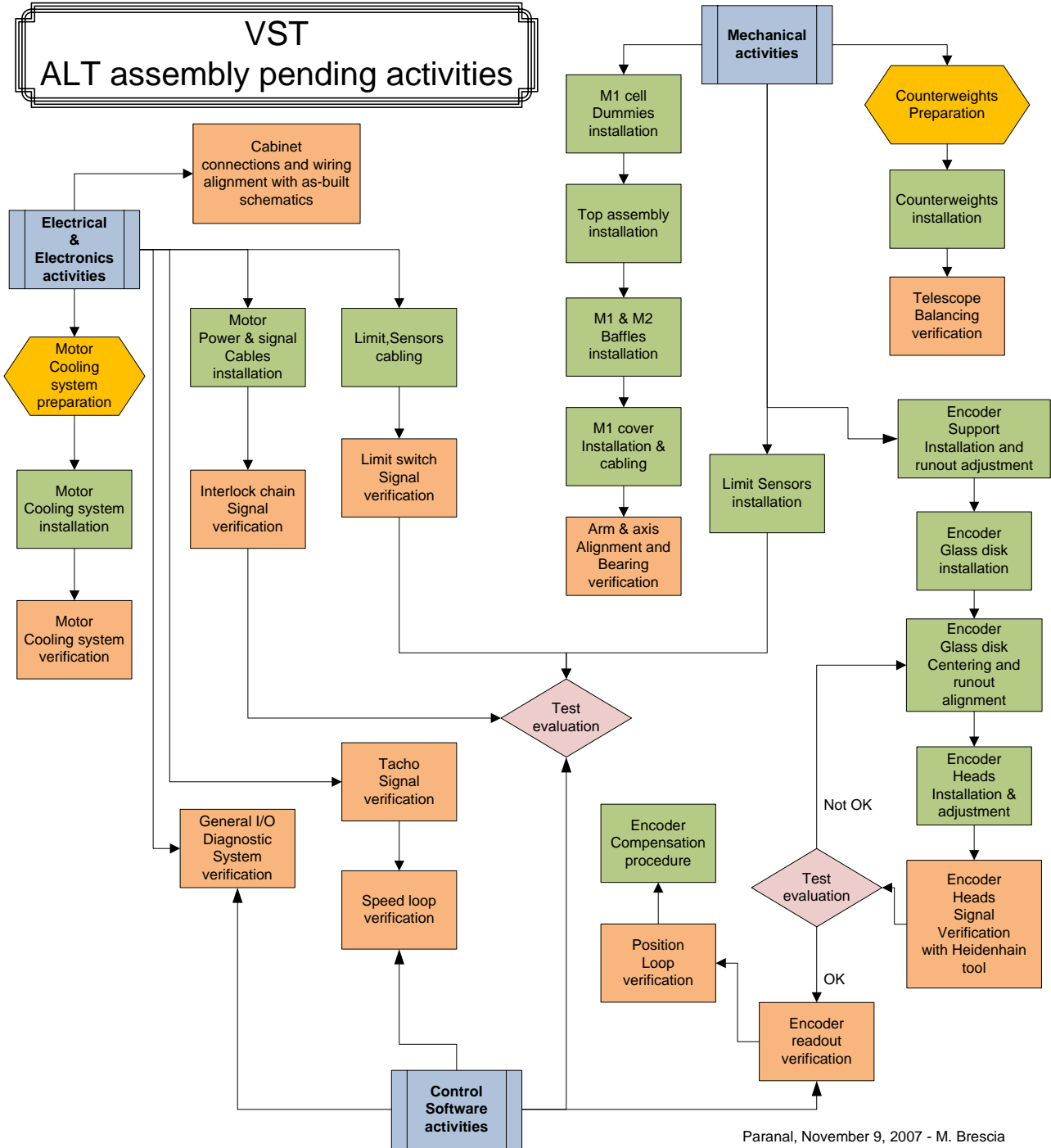
4.2 AZ system

The following diagram is the logical scheme of all pending activities to be done for the AZ system.



4.3 ALT system

The following diagram is the logical scheme of all pending activities to be done for the ALT system.



5 Time Schedule

The experience done on the previous integration schedule basically teaches two things:

- The time estimation about installations and/or implementations was generally correctly foreseen;
- The time needed to perform the classical check loops (verification, recovery, test) was generally underestimated, even if, in some cases, particularly critical events occurred were in principle unpredictable;

As can be seen in the previous pending activity diagrams, the check loops are massively present and in some cases very time-consuming. They can influence in a very huge way the time budget. It is not easy to quantify a priori the real time needed, also considering the integration cost budget, related obviously also to the required man power.

In the next review of this document, as said after the end of the current integration phase (November 22), the Gantt diagram with details of activity time schedule will be provided.

For the moment, the minimum time schedule has been quantified, taking into account all the pending activities, as follows:

Period nr. 1: one 15/0 work shift [06/12 – 20/12], 2007 (15 working days)

Period nr.2: two 11/3 work shifts [07/01 – 17/01] and [21/01 – 31/01], 2008 (22 working days + 3 rest days)

Period nr. 3: three 11/3 work shifts [25/02 - 06/03], [10/03 – 20/03] and [24/03 – 03/04], 2008 (33 working days + 6 rest days).

TOTAL: 70 working days

The suspension during February is due to the vacation period in Chile (it corresponds to August in Italy).

6 Man power

The man power estimation takes into account the past experience and activities already done during past integration phase. By looking at the pending activities and considering also the last work shift of November, the scenario is the following:

- The time and man power budget has been already discussed with the ESO VST team. So far, the schedule takes already into account the confirmed availability of ESO VST assigned personnel;
- As already agreed with G. Ihle and O. Lavin, there is a realistic requirement of one mechanics worker;
- As already agreed with J. Alonso and R. Parra, from the electronics point of view, a big amount of cabling, verification, test, documentation and schematics are still pending. So far, there is the realistic necessity to preserve and maintain available the actual man power in the next periods;
- In all the next periods, the presence of a site manager, well inserted in the ESO Paranal environment and in the integration logistic and practical activities, is considered essential;
- ESO requires a safety officer, responsible for all safety procedures and working rules on the VST base camp;

By taking into account all these variables, the requirement to INAF for the next integration periods is:

1 (one) mechanics technician + 3 (three) electronics technicians¹

1 (one) site manager + 1 (one) safety officer

¹ There is the possibility to reduce to 2 elements the number of electronics technicians in the period nr. 3



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From a practical point of view, the best situation would be to have the same persons who already covered the requested roles. Their experience would permit an immediate startup of the second integration phase.

7 Cost estimation

The required budget estimation (to be revised for some items) for the second integration phase is the following:

MAN POWER			
ITEM	QUANTITY	UNIT COST [euro]	TOTAL [euro]
accommodation at Paranal for INAF people	2 people for 70 days	2x35	4900
accommodation outside Paranal for INAF people	2 people for 12 nights	2x70	1680
travels Italy-Chile for INAF people	3 for 2 people	2000x2	12000
contract for Chilean mechanics worker	1 for 3 months	1200/month	3600
contract for Chilean electronics workers	3 for 2 months 2 for 1 month	1200/month	9600
contract for site manager	1 for 3 months	?	?
contract for safety officer	1 for 3 months	?	?
LOGISTICS			
container office type	4 for 4 months	200/month	3200
container storage type	2 for 4 month	250/month	2000
PURCHASES			
AZ limit switches (sensors + cabling + supports)	9 sensors (considering spares) electrical/mechanics material		1100
steel material for the top ring counterweights			4500
HBS pumps	2	4000 ²	8000
AZ/ALT motor and HBS cooling system		?	?
CONTINGENCIES			
Chilean worker contract on February (if needed to ensure continuity)	4	1200	4800
unforeseen necessities			5000
TOTAL³			60380

We need from INAF an urgent official confirmation about the budget coverage and agreement on the progress plan, in order to immediately activate the contracts and the logistic preparation of the next integration missions.

Kind Regards,

Max

² This quotation must be well verified, at the moment it is a conservative price.

³ The total amount do not take into account the cost of items classified as ? (unknown).



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