

Transmitted by the expert from Japan

Informal Document No. GRSP-38-14
(38th GRSP, 6th- 9th December 2005,
agenda item B.1.8.)



Japan's Comment on GRSP/2005/5 ECE-R.16



Introduction

- At the 37th GRSP, we verified if the content proposed in GRSP/2005/5 as below is feasible in HyGe test facilities commonly used in Japan and reported the result:
 - . Acceleration curve within the corridor
 - . Initial slope of acceleration
 - . 5ms-10G & 10ms-20G
 - . Sled total velocity change
 - . $\Delta V = 51 \pm 2/0$ km/h
 - . Sled acceleration distance
 - . $50 \pm 1/0$ km/h = 40 ± 5 cm
- As we reported the result of verification in Informal Doc. GRSP-37-10, we could not produce a sled pulse complying with all requirements simultaneously.



Introduction

- In addition, at the 37th GRSP, we discussed provisions intended to regulate the sled acceleration initial slope because there existed two provisions; “Sled acceleration distance” and “Initial slope of acceleration (5ms-10G, 10ms-20G) ”. As a result, “Sled acceleration distance” was deleted.
- At the same time, Japan proposed “7.5ms-10G, 12.5ms-20G” because “Initial slope of acceleration. 5ms-10G, 10ms-20G ” is difficult to be met, but it is carried over to the next session.
- We decided to conduct a verification test again to see if “Initial slope of acceleration: 5ms-10G,10ms-20G” can be achieved with the condition excepting “Sled acceleration distance”.



Verification test

- This verification test was conducted to satisfy the following conditions first,
 - . Acceleration curve within the corridor
 - . Sled total velocity change

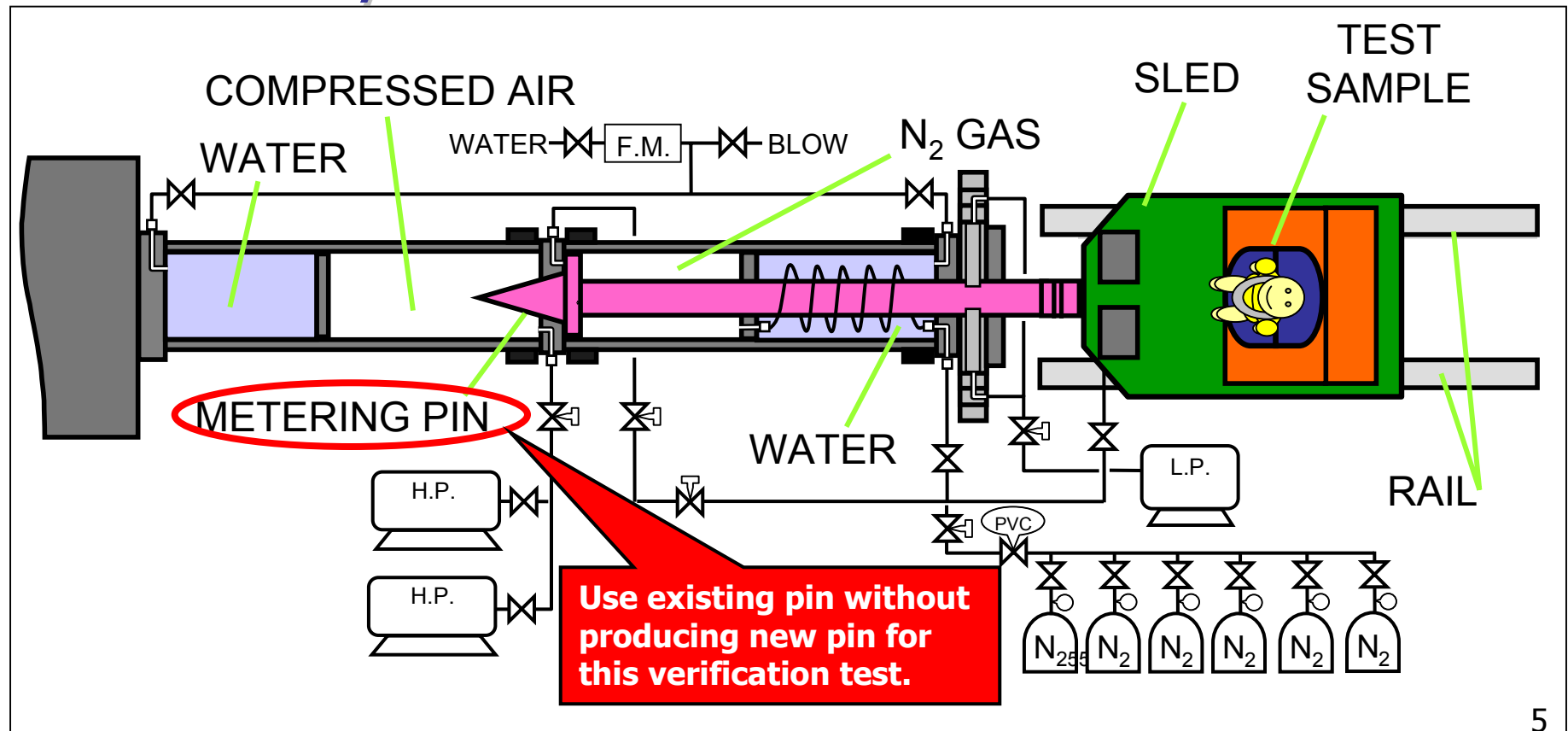
$$:\Delta V = 51 \pm 2/0 \text{ km/h}$$

and then we reviewed whether it is possible to satisfy the initial slope of the sled acceleration (5ms-10G, 10ms-20G) or not.

- The tests were conducted with the pins currently possessed by each facility on this occasion.

Acceleration Sleds Used in Japan

→ Pneumatic sled test devices (HYGE) are mostly used





Results of Verification

- The test was conducted using existing test facilities in Japan (HyGe). Unfortunately the test results did not fulfill all the proposed requirements.
- Especially as the 12inch HyGe Sled has heavy sled mass, the 5ms-10G and 10ms-20G requirements were very hard to be met for this size sled.

On the other hand, the specified ranges of accelerate corridor and speed will be hard to satisfy when trying to satisfy the initial slope of sled acceleration.

R.16 Test Results

GRSP-37-10

T/N	A	B	C	
	Conformity in Corridor	Sled Velocity	Curve condition	
		total □ □ km/h	at 5m s G	at 10m s G
R16 (GRSP/2005/5)	-	51+2/0	□ 10	□ 20
Sled A - pulse 1	Fail	54.85	7.31	22.7
Sled A - pulse 2	Fail	53.29	5.41	18.2
Sled A - pulse 3	Fail	49.97	4.93	15.6
Sled B - pulse 1	Fail	52.88	16.44	22.73
Sled B - pulse 2	Fail	51.00	15.86	21.93
Sled B - pulse 3	Fail	55.56	17.59	24.31



New

Sled A - pulse 4	Fail	54.16	4.87	18.46
Sled A - pulse 5	Fail	54.17	5.00	18.06
Sled B - pulse 4	Pass	52.76	9.85	21.02

*Sled A : 12inch cylinder, HyGe

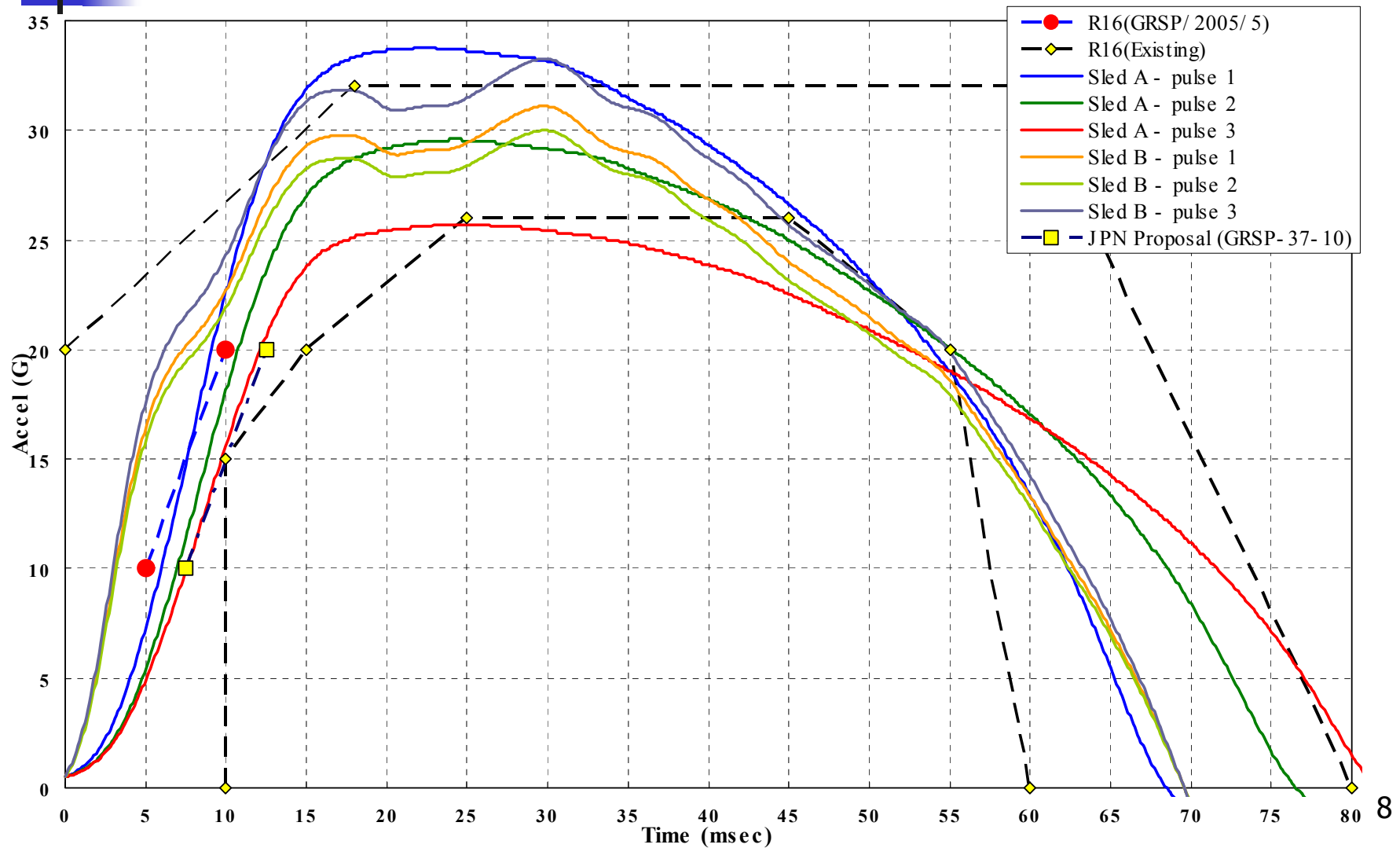
□ Sled B : 9inch cylinder, HyGe



No test devices in Japan meet all requirements 7

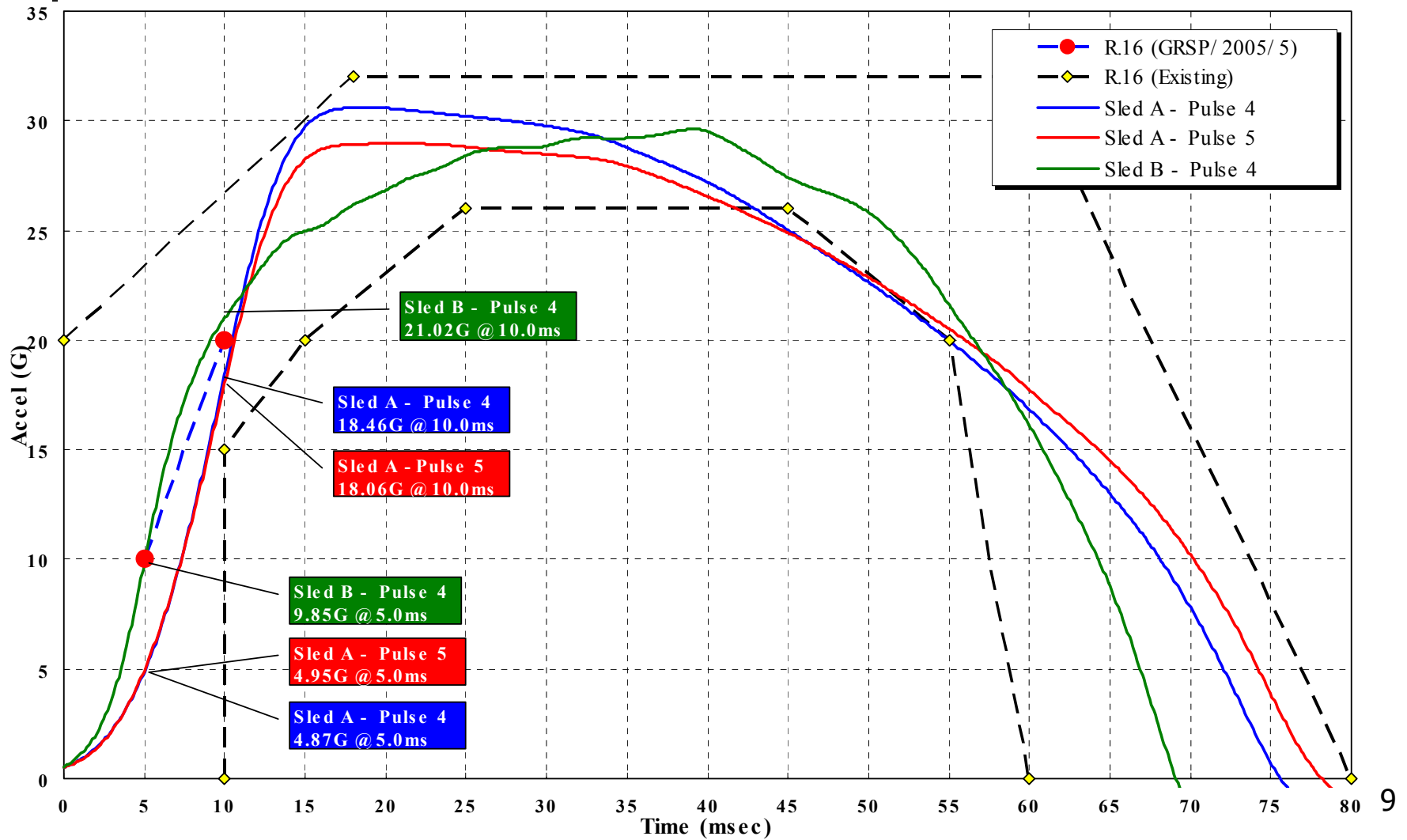
R.16 Test Results

Sled Acceleration (GRSP-37-10)



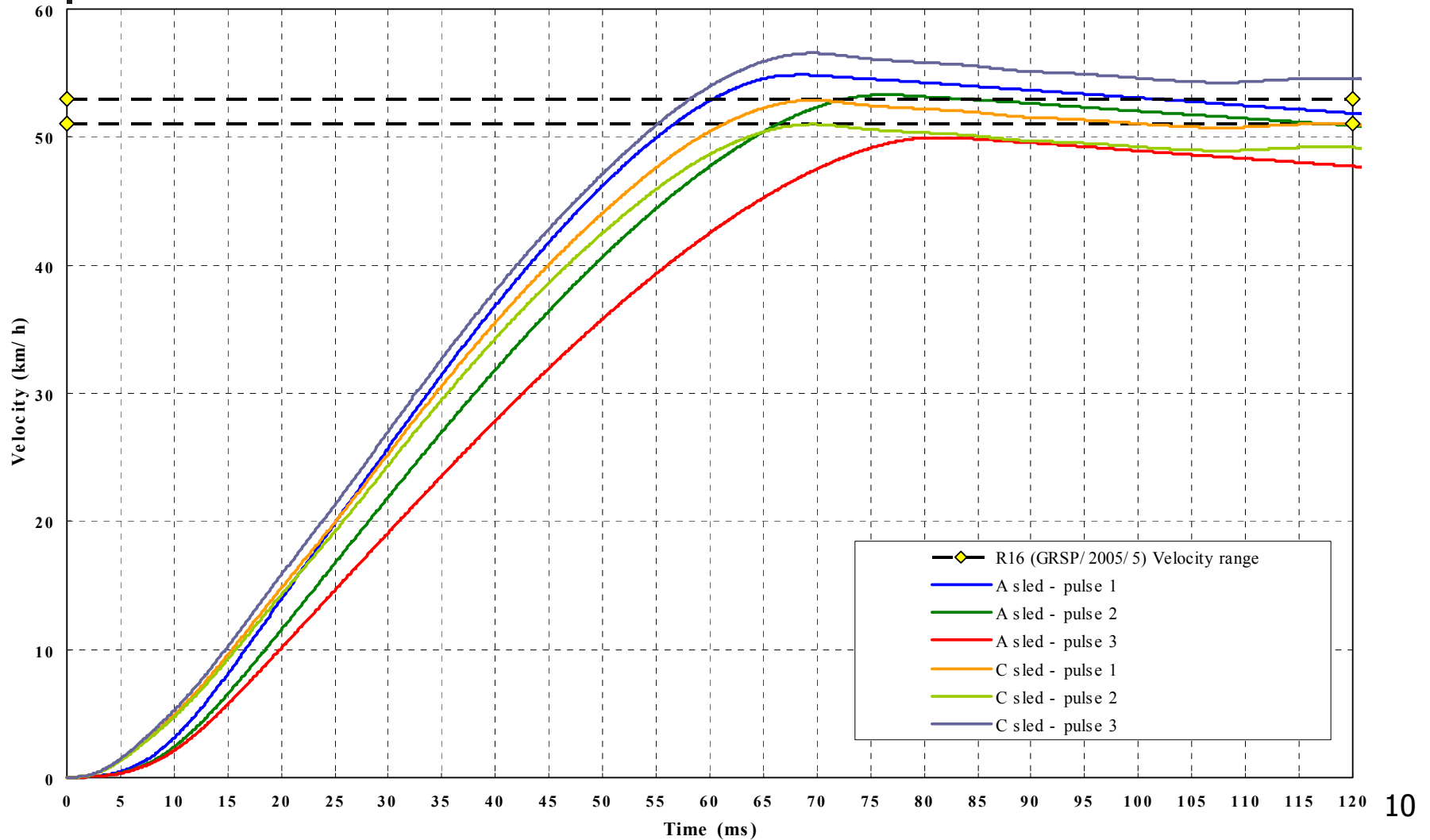
R.16 Test Results

Sled Acceleration (New)



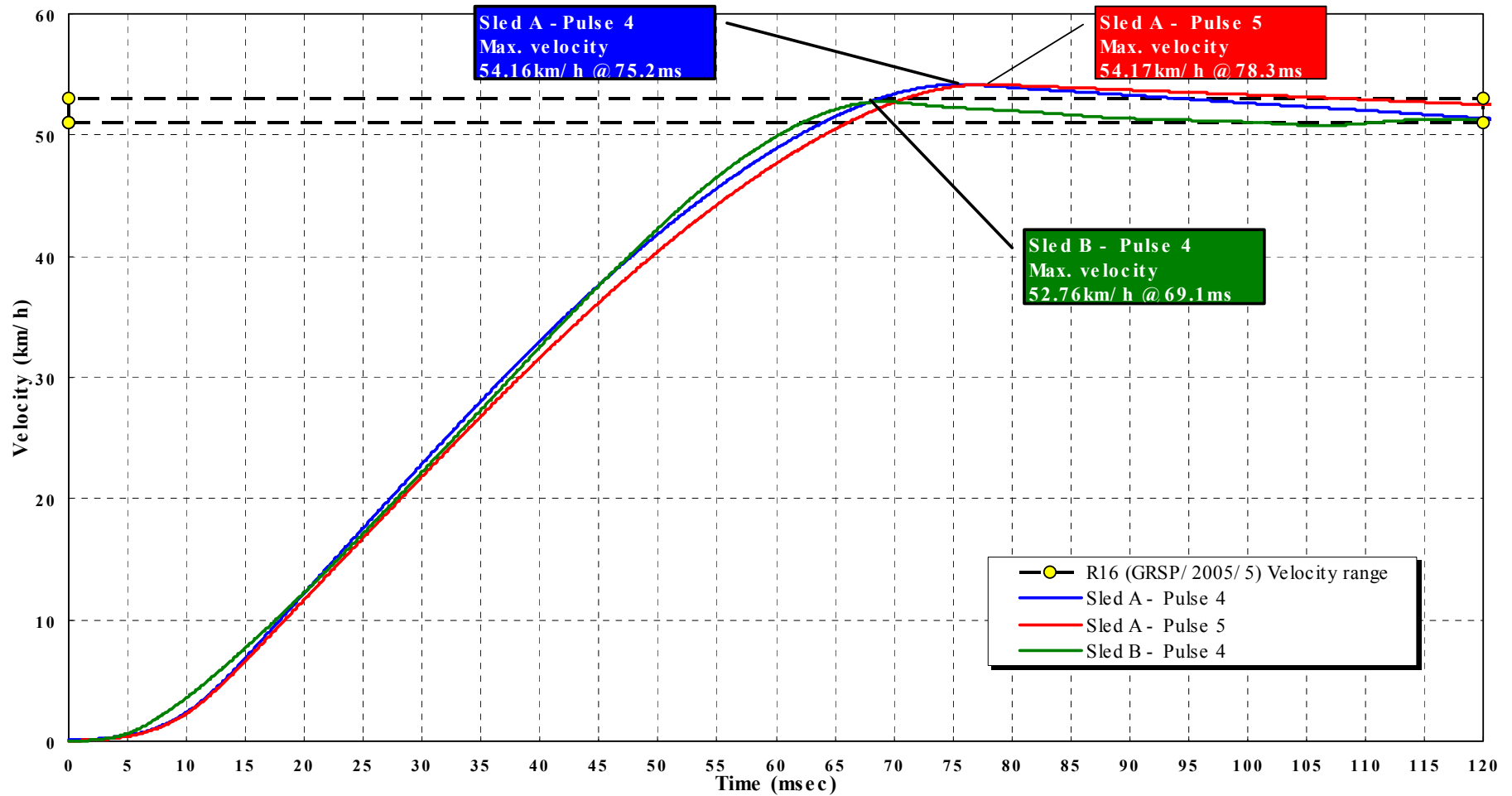
R.16 Test Results

Sled Velocity (GRSP-37-10)



R.16 Test Results

Sled Velocity (New)





Conclusion

- Proposed conditions were achieved in one test with Sled B of smaller sled mass (9 inch, Sled mass = 700 kg), but could not be achieved in the other tests with Sled A of larger sled mass (12 inch, Sled mass = 1,100 kg).
- We would like to make tuned metering pin for current proposal and conduct verification test with 12 inch HyGe sled again, and then we will review the proposal by the 39th GRSP session.