

2012 EWAPS - Amsterdam

API RP19B Update

Presented by

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Shell

Chair API RP 19B Committee

**European and West African
Perforating Symposium Amsterdam**



2012

Briefing and Discussion

Briefing on recent meeting of API RP19B and API RP67 Committees

Update on development and testing of cement based Synthetic Target

Discussion with SPE on the Perforating Section of the new SPE Wiki and incorporation into an industry handbook or manual

Update on IPS in 2012 and looking forward to 2013, including Website Perforators.org and LinkedIn Group

API RP19B

Section 1: Evaluation under surface conditions in concrete targets

Section 2: Evaluation under stress conditions in rock targets

Section 3: Evaluation under elevated temperatures

Section 4: Evaluation of flow performance under simulated downhole conditions

Section 5: Debris Evaluation

Section 6 (new): Standard for measurement of gun swell

API Witness Instructions & Report

1. CHARGE SELECTION

- Witness must include the date with signature on sealed boxes of shaped charges

3. GUN FIRING /DATA COLLECTION

- Witness must verify that the casing used in the construction of the target meets the reported grade and weight.

5-8. (Optional activities to witness)

- If witnessed it is mandatory to record information from documentation

API RP19B

Section 1



Registered Data Sheet Perforating System Evaluation, API RP 19B Section 1

<input type="checkbox"/> API Form 19B-Section 1 <input type="checkbox"/> Conforms to All requirements of Section 1 <input type="checkbox"/> Special test - See Remarks/Exceptions below	
Service Company _____	Explosive weight _____ gm, Powder, Case Material _____
Gun OD & Trade Name _____	Max Temp, °F _____ 1 hr _____ 3hr _____ 24hr _____ 100hr _____ 200hr
Charge Name _____	Maximum Pressure Rating _____ psi, Carrier Material _____
Manufacturer Charge Part # _____ Date of Manufacture _____	Shot Density Tested _____ Shots/ft
Gun Type _____	Recommended Minimum ID for Running _____ in.
Phasing Testec _____ degrees, Firing Order: _____ Top down _____ Bottom up	Available Firing Mod. _____ Selective _____ Simultaneous
Debris Description _____	
Remarks/Exceptions per Section 1.11 _____	
Casing Data _____ OD, Weight _____ lb/ft, API Grade, _____ Date of Section 1 Test _____	
Target Data _____ OD, Amount of Cement _____ lb, Amount of Sand _____ lb, Amount of Water _____ lb.	
Date of Compressive Strength Test _____ Briquette Compressive Strength _____ psi, Age of Target _____ days	
Shot No. _____	No 1 No 2 No 3 No 4 No 5 No 6 No 7 No 8 No 9 No 10 No 11
Clearance, in. _____	_____
Casing Hole Diameter, Short Axis, in. _____	_____
Casing Hole Diameter, Long Axis, in. _____	_____
Average Casing Hole Diameter, in. _____	_____
Total Depth, in. _____	_____
Burr Height, in. _____	_____
Shot No. _____	No 12 No 13 No 14 No 15 No 16 No 17 No 18 No 19 No 20 No 21 No 22 Average
Clearance, in. _____	_____ xxx
Casing Hole Diameter, Short Axis, in. _____	_____
Casing Hole Diameter, Long Axis, in. _____	_____
Average Casing Hole Diameter, in. _____	_____
Total Depth, in. _____	_____
Burr Height, in. _____	_____
Remarks: _____	
WITNESSING INFORMATION	
Witnessed by: _____	
Optionally Witnessed Activities: Target Pouring _____ Briquette Preparation _____ Briquette Testing _____ Burr Height Measurements _____	
I certify that these tests were made according to the procedures as outlined in API RP 19B: Recommended Practices for Evaluation of Well Perforators, Second Edition, September 2006. All of the equipment used in these tests, such as the guns, shaped charges, detonating cord, etc., was standard equipment with our company for the use in the gun being tested and was not changed in any manner for the test. Furthermore, the equipment was chosen at random from stock and therefore will be substantially the same as the equipment, which would be furnished to perforate a well for any operator. API neither endorses these test results nor recommends the use of the perforator system described.	
Penetration data recorded in API RP19B Section 1 may not directly correlate to penetration downhole.	
CERTIFIED BY _____ (Company Official) (Title) (Date) (Company) (Address)	
Name of test as it should appear on website: _____	
Name of test as it should appear on application and application date: _____	

- **Some issues with getting progress on Sect 2**
- **Need to get broad input into this important standard – requested that we have 1 Operator and at least 3 other members**
- **Trying to set up longer meetings to get job done as a team over 1-2 days, to avoid distractions**

- **Again some issues with getting progress on Sect 3**
- **2 Operators have now joined this committee - important to have a suitable method of identifying performance at temperature**
- **Safety issues raised with various methods of heating charges.**

API RP19B

Section 4

- **Section 4 has been sent to API legal for final review**
- **It has also been sent to the technical authors for final formatting etc.**
- **Should be released shortly.**

Section 5 Testing Summary

- Pre-weigh assembly
- Shoot target casing (vertical)
- Preserve gun with internal debris and dry
- Weigh spent gun assembly
 - Total debris lost at detonation
- Roll carrier and capture/sieve/weigh add
 - Total debris rolled from gun
- Present final results in various formats

Recommendations for Review

- Post roll debris weight: current
 - Currently weigh all debris gathered from roll test
 - Sieve debris and weigh debris by size
 - Adjust precision of final debris results
- Recommended
 - Use only sum of sieved weights for total (consistency)

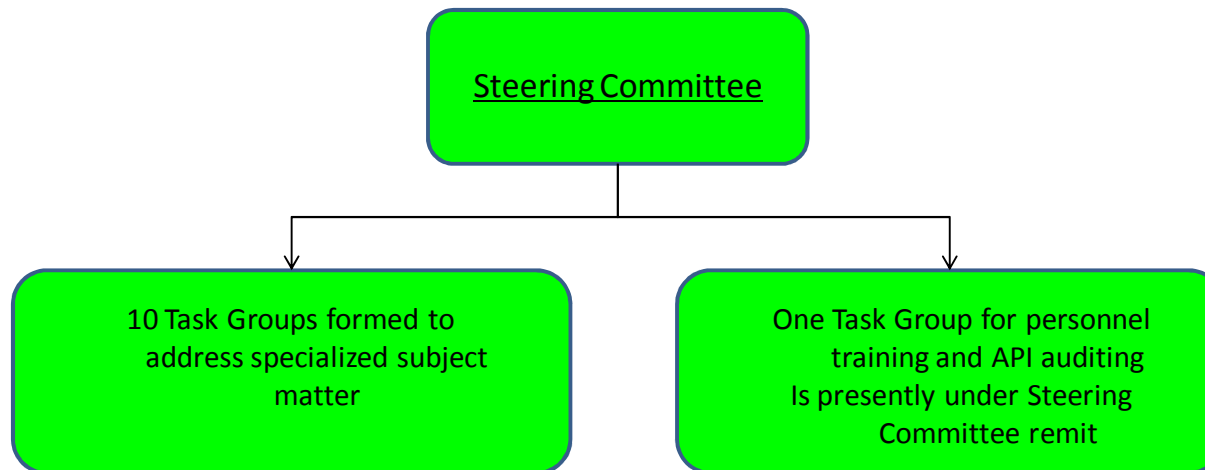
Section 6 (new): Standard for measurement of gun swell

- Currently no standard for gun swell. Increased use of high performance small diameter carrier guns in Thru-Tubing operations has resulted in the requirement for a standard fit-for-purpose method of measuring swell.
- Full draft of Sect 6 has been completed – to be submitted for committee review before next meeting



API RP67

API RP 67 Task Group



Company representation

Owen	Shell
HAL	Hunting Titan
SLB	DynaEnergetics
Ecosse	Cased Hole Solutions
Baker	Expro
BP	Shell PDO
SPEX	

Teleconferences since OTC

- May 21
- Jun 26
- Aug 16
- Sep 24

API RP67

API RP 67 Task Groups

1. Detonators, Delays, Surface Firing Panels	<u>Ongoing</u> Multiple meetings	6. Coil Tubing Jobs	Starting Chair to call meeting
2. Interrupts	Starting Chair to call meeting	7. Security / Regulatory	<u>Ongoing</u> One pre-meeting
3. Tractors	<u>Ongoing</u> Multiple meetings	8. Pipe Recovery	Starting Chair to call meeting
4. Temperature Mgmt	<u>Ongoing</u> Multiple meetings	9. Pressure Control	Starting Chair to call meeting
5. Firing Heads on Bottom of Guns	Starting Oct meeting set	10. Special Categories of Explosive Devices	Starting Chair to call meeting

API RP67

- Goal is to complete re-write by Feb 2013
 - Maintain monthly SC teleconferences
 - Encourage TG chairs to start/continue their meetings
- Timely subject matter since questions regarding field issues continue to be received
 1. Detonators and electronic systems, including select fire (what's safe and what's not?)
 2. Safety protocol/multi-point failure analysis for tractors
 3. HPHT guidelines (especially when problems arise, how to handle those situations)
- Working with API to avoid anti-trust issues during our meetings.

Cement Target Development – Phase II

Continued development and testing of cement and sand based target

Previous trials had errors in the mixes which resulted in v weak & porous targets, but useful data

October trials – tested various sands for porosity and bulk density

Mixed 10 sets of 3 x 6in dia. x 2ft target samples with briquettes to obtain a broad field of data to work from for phase 3

All targets exhibited porosity – but not tested yet

Briquettes to be tested after 15 & 30 days and then targets shot with 2in charge, unconfined – Perm. Porosity and UCS to be measured

Initial 15 day briquette tests as follows:-

Cement Target Development – Phase II

Batch	Sand Type	Ratios - Pounds			Briquet Properties (2-in cubes)			
		Sand	Cement	Water	Compressive Str 15 day (psi)	Density 15 day (g/cc)	Compressive Str 30 day (psi)	Density 30 day (g/cc)
A	25/30	400	75	75	1270	1.82		
B	16/30	400	75	75	1057	1.81		
C	All Purpose	400	50	60	627	1.71		
D	All Purpose	400	65	70	1213	1.87		
E	16/30	400	65	60	1333	1.88		
F	Ok# 1	400	65	65	1030	1.85		
G	25/30 + OK #1 1.85 : 1	400	65	55	3247	2.11		
H	16/30 + OK #1 3 : 1	400	65	50	3093	2.13		
I	OK #1	400	80	65	1267	1.90		
J	12/20	400	65	50	2540	2.01		

Cement Target Development – Phase II



Much appreciation to the JRC Alvaredo team who have worked with enthusiasm and 'understanding' with me on the 'Brinstone' project

SPE WiKi Discussion



PetroWiki

- **Previously in IPS 2012 Houston – delegates agreed that we should have an industry created and endorsed manual or handbook – no clarity on how though!**
- **Discussion with SPE at ATCE San Antonio - various ways to publish – SPE Monographs, PEH etc.**
- **SPE now have WiKi as well, only existing material is on the WiKi**
- **We can set up a cross industry editorial group to ensure the WiKi is effectively populated and controlled – canvas delegates**

The PetroWiki pilot, launched 1 October, is based on the drilling and completions volume of the *Petroleum Engineering Handbook (PEH)*. Published in 2007, many new technologies are missing from *PEH*. The wiki format will allow SPE members to keep *PEH* evergreen, updating and extending it to new technologies. By October 2013, the site will contain the complete handbook, and it will grow with contributions from SPE's global membership base. All content in PetroWiki is vetted by moderators with subject matter expertise. "This is a game-changer for SPE. PetroWiki will be an important technical resource for our industry, with rich links to other content, including papers in OnePetro" said Mark Rubin, Executive Director of SPE. "The opportunity for members to share their knowledge with others, and for younger members to learn from these experiences will be invaluable." SPE

IPS in 2012 and 2013

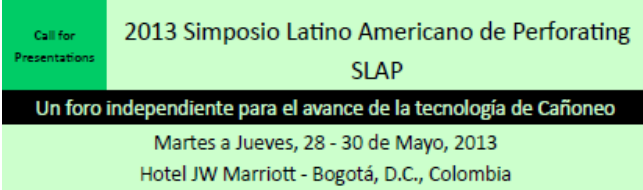
Successful year for IPS in Houston and the new EWAPS in Amsterdam – Well done EWAPS Committee!

Busy year in 2013 – too busy??

APPS 2013 KL Malaysia – committee forming - date 24 – 25 April at the Intercon in KL again. Looking for NOC participation.

Perforating Safety Forum – Westhollow, Houston – 4 May - hosted by Kent Folse – Shell.

SLAP 2013 Bogota Colombia – 28-30 May



Call for Presentations

2013 Simposio Latino Americano de Perforating
SLAP

Un foro independiente para el avance de la tecnología de Cañoneo

Martes a Jueves, 28 - 30 de Mayo, 2013
Hotel JW Marriott - Bogotá, D.C., Colombia

MENAPS 2013 Muscat Oman – Q3 2013 – Committee and location not yet finalised

IPS/IPF is still an informal group run by the active committees around the world

IPF/IPS on Perforators.org and LinkedIn



Website fulfils basic needs but with greater activity requires major improvement

To be discussed with current sponsor Guardian, to upgrade the facility or to look at transfer to another sponsor

LinkedIn – fairly active – key location for announcing meetings and for Perforation discussion – all group members vetted not an open group. Around 900 members.



Thank you all for continuing to so enthusiastically support the International Perforating Forum around the world

Firstly – All the volunteer members of all the committees who put in their valuable time to run these conferences so well!

Secondly - All the many many sponsors who kindly come up every time with the money to enable these Symposiums to be free to the industry - I see we have a record 19 sponsors this time!

Thirdly – To all the presenters for making these Symposiums really worth coming to

Finally – To all the delegates who take time out to make these Symposiums buzz with enthusiasm!