

SPECIFICATIONS FOR PERIODIC TESTING OF SAFETY RELIEF VALVES AND LIQUID NITROGEN (LN₂) STORAGE VESSELS [AS PER SMPV (Unfired) RULES 1981]

Pressure Test of Liquid Nitrogen Storage Tanks and test of Safety Relief Valves-SRVs:

Space Applications Centre is using Liquid Nitrogen (LN₂) for different test purposes. LN₂ is being stored in static Cryogenic LN₂ Storage Tanks of various sizes & capacities at SAC Satellite Campus as well as at New Bopal Campus. These LN₂ Storage Tanks are equipped with adequately sized Safety Relief Valves (SRVs), which are required to be tested periodically as per CCOE/PESO SMPV (Unfired) Rules 1981, Rule No.18 (for Safety Relief Valves) and Rule No. 19 (for Liquid Nitrogen Storage Tanks) by CCOE/PESO certified competent authority. SAC wishes to enter in to a rate-contract for testing of Safety Relief Valves and Liquid Nitrogen Storage Tanks for a period of 3 years. The overall scope of work and other terms and conditions are detailed hereunder:

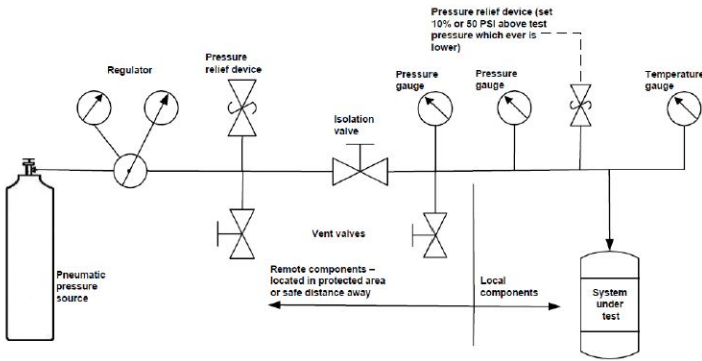
SCOPE OF WORK:

Sr No	Description	Vendor's Response
01.	a) Pressure test of the Liquid Nitrogen Storage Tanks as per the requirements stipulated under CCOE/PESO SMPV (Unfired) rules 1981. b) Issue of the test certificates (Rule-19) in the prescribed proforma / format for subsequent submission to PESO for license renewal/s. List of Liquid Nitrogen Storage Tanks with the details required for pressure test of Liquid Nitrogen Storage Tanks is enclosed as Table-1.	
02.	A. Test of the Safety Relief Valves to the specified set pressure in accordance with the ASME boiler and pressure vessel code {ASME Sec VIII Div.-1 UG-126 (d)} B. Adjustment of the Safety Relief Valves to the specified set pressure in accordance with the ASME boiler and pressure vessel code {ASME Sec VIII Div.-1 UG- 126 (d)} and sealing of all the set pressure adjustment. C. Test of the seal leak tightness of the Safety Relief Valve as per API 527. D. Issue of the test certificates (Rule-18) in the prescribed proforma / format for subsequent submission to PESO for license renewal/s. List of Safety Relief Valves with the details required for the testing of the Safety Relief Valves is enclosed as Table-2.	

PRESSURE TESTS TO BE CONDUCTED:

Sr No	Description	Vendor's Response
01.	A. Test and witness of the tests as per SMPV (Unfired) Rule No-18 (Xiii) [1] for periodic test of Safety Relief Valve at SAC Satellite Campus, Ahmedabad as well as at SAC, New Bopal campus, Ahmedabad as & when required.	

	B. Issue of the test certificate in the prescribed proforma / format as per SMPV (Unfired) Rule No-18 (Xiii) [1] for periodic testing of Safety Relief Valve at SAC Satellite Campus, Ahmedabad as well as at SAC, New Bopal campus, Ahmedabad.	
02.	<p>A. Test and witness of the tests as per SMPV (Unfired) Rule No-19 [1] for periodic test of Liquid Nitrogen (LN₂) Storage Tanks at SAC Satellite Campus, Ahmedabad as well as at SAC, New Bopal campus, Ahmedabad as & when required.</p> <p>B. Issue of the test certificate in the prescribed proforma / format as per SMPV (Unfired) Rule No-19 [1] for periodic testing of Liquid Nitrogen (LN₂) Storage Tanks at SAC Satellite Campus, Ahmedabad as well as at SAC, New Bopal campus, Ahmedabad.</p>	
03.	Certifier will arrange all the required equipment and accessories / Tools like Nitrogen (N ₂) Cylinder with pressure regulator / tools / attachments / pressure manifold / connections / connecting lines etc. and any other material required for the testing of Safety Relief Valves and Liquid Nitrogen (LN ₂) Storage Tanks.	
04.	<p>➤ If any material is required to be arranged by SAC, Ahmedabad to conduct the test shall clearly be mentioned in the quotation.</p> <p>➤ However, SAC, Ahmedabad shall provide the Liquid Nitrogen (LN₂) required during the periodic testing of Liquid Nitrogen (LN₂) Storage Tanks as per SMPV (Unfired) Rule No-19 [1].</p>	
05.	The reference pressure gauges (master gauges) used for testing by the certifier, should be calibrated by standard laboratories & valid calibration certificate of the reference pressure gauges should be submitted to SAC, Ahmedabad at the time of testing as well as along with the certificates for records.	
06.	<p>Certifier should submit the test report / test certificate after completion of the test/s to SAC, Ahmedabad.</p> <p>Note:</p> <p>(a) For Safety Relief Valves: Test certificate/s should contain details like Identification no./ Tag no., size, make, year of manufacturing, location at SAC, set pressure, test pressure etc.</p> <p>(b) For Liquid Nitrogen (LN₂) Storage Tanks: Test certificate/s should contain details like Identification no./ Tag no., tank name, tank location at SAC, capacity of tank, year of manufacturing, test pressure, maximum allowable working pressure, maximum working pressure etc.</p>	
07.	Any pre-requisite for taking up the work shall be clearly brought forward in the quotation and certifier may seek any other details required from SAC, Ahmedabad before submitting quotation including site visit.	
08.	Certifier should provide the quotation for individual LN ₂ Storage Tank and Safety Relief Valve (per tank / valve basis) as per the details given and the exact	

	<p>number of Liquid Nitrogen Storage Tanks and Safety Relief Valves to be tested will be decided at the time of placing the purchase order. Since this is a service rate-contract, the payments will be made on pro-rata basis (for the number of Safety Relief Valves / Liquid Nitrogen Storage Tanks tested with the specified periodicity as per SMPV Rules, as and when they are carried out).</p> <p>Prices quoted shall be firm and fixed for the period of 3 years from the date of entering in to rate-contract.</p>	
9.	Certifier should attach the Purchase Order copy (at least one) of similar activity along with the quote.	
10.	Payment shall be paid on the basis of actual testing work carried out and on the receipt of test certificates, test reports and Safety Relief Valves / Liquid Nitrogen Storage Tanks tags with test date and next due date of the test at SAC, Ahmedabad.	
11.	The order placed for testing of Safety Relief Valve / Liquid Nitrogen Storage Tanks shall be valid for 3 years.	
12.	Certifier shall furnish a copy of certificate (along with its validity) issued by CCOE/PESO (Dept. of Industrial Policy & Promotion / Ministry of Commerce & Industry) on their name for testing and issuing certificate for the job as competent authority in this regard.	
13.	The certifier shall furnish the details and tests required to be conducted (if any, in addition to the above-mentioned tests), with a budgetary quote, to obtain a license from CCOE / PESO for the Liquid Nitrogen (LN ₂) storage tanks.	
14.	<p>The pneumatic pressure tests for Safety Relief Valves and Liquid Nitrogen (LN₂) Storage Tanks shall be conducted as per the enclosed schematic-1, with all the required components in place for ensuring the safety while conducting the test/s, as well as certifier shall also be responsible for obtaining any statutory / regulatory approvals from concerned authorities before commencement of pneumatic pressure tests -if required.</p>  <p style="text-align: center;">Schematic-1</p>	
15.	Certifier can propose an alternate prevailing method/s for conducting the pneumatic pressure test for Liquid Nitrogen (LN ₂) Storage Tanks (supplier shall attach a test schematic / method and a write-up along with the quote which is	

	routinely conducted by them for Cryogenic Storage Vessels preferably Liquid Nitrogen (LN ₂) located elsewhere in the industry). Certifier should attach a list along with the addresses where the similar pneumatic pressure test/s for Cryogenic Storage Vessel/s have been conducted by them.	
16.	SAC, Ahmedabad will not provide any kind of transportation arrangement to the vendor or vendor personnel/s coming from his site to SAC, Ahmedabad and also for return journey from SAC, Ahmedabad to his site. The vendor or vendor personnel/s has to make their own arrangement for transportation to reach SAC Main Campus or SAC New Bopal Campus as per the requirement for the testing and return from test site to his site & other logistics.	
17.	Pressure test of the Safety Relief Valves / Liquid Nitrogen Storage Tanks shall have to be completed by the certifier at SAC Satellite campus as well as at New Bopal campus as and when required by SAC within 72 hrs. after receiving Purchase Order.	
18.	As the rate contract is planned for a period of three years, certifier shall quote their firm and fixed price for Pressure test of the Safety Relief Valves / Liquid Nitrogen Storage Tanks valid during the period of this rate contract of three years.	

Note: Vendor shall fill vendor's response column for scope of work point no. 01 to 02 and pressure test to be conducted point no. 01 to 18. Otherwise quotation of supplier will not be processed for further processing.

Table-1

<u>DETAILS OF LN2 STORAGE TANKS</u>						
Sr. No.	Location	LN2 Storage Tank	Make	Capacity (litres)	Max. working Pressure	Max. Allowable Working Pressure
1.	SAC main Campus, 3915	LIN-1	BHPV	33350	5.5 kg/cm ²	6.0 kg/cm ²
2.	SAC main Campus, 3915	LIN-2	BHPV	33350	5.5 kg/cm ²	6.0 kg/cm ²
3.	SAC main Campus, 3915	LIN-3	BHPV	6000	15.0 kg/cm ²	16.0 kg/cm ²
4.	SAC main Campus, 4601	41 KL	INOX	40960	5.5 kg/cm ²	17.6 kg/cm ²
5.	SAC main Campus, 5149	12 KL	INOX	11830	5.5 kg/cm ²	17.6 kg/cm ²
6.	SAC main Campus, 5149	03 KL	INOX	2940	10.0 kg/cm ²	10.0 kg/cm ²
7.	SAC, New Bopal campus, 8498	T1A	INOX	134865	10.0 bar,g	12.0 bar,g
8.	SAC, New Bopal campus, 8498	T1B	INOX	134865	10.0 bar,g	12.0 bar,g
9.	SAC, New Bopal campus, 8498	T1C	INOX	134865	10.0 bar,g	12.0 bar,g
10.	SAC, New Bopal campus, 8498	T2	INOX	35756	10.0 bar,g	12.0 bar,g

Note: Quantity of LN2 Storage Tanks for pressure testing may be increase/decrease during time of testing and payment shall be made on pro-rata basis. Supplier shall quote the prices on per tank basis.

Table-2

DETAILS OF SAFETY RELIEF VALVES TO BE PERIODICALLY TESTED EVERY YEAR FOR 3 YEARS						
Sr. No.	Location	LN2 Storage Tank	Make of SRV	SRV Type	Set Pressure	Size
1.	SAC main Campus, 3915	LIN-1	Mekaster	Flanged	5.5 kg/cm ²	1 ½ " X 3 "
2.	SAC main Campus, 3915	LIN-1	Fainger Laser	Threaded	5.5 kg/cm ²	½ " X 1 "
3.	SAC main Campus, 3915	LIN-2	Sebim	Flanged	5.5 kg/cm ²	1 ½ " X 3 "
4.	SAC main Campus, 3915	LIN-2	Fainger Laser	Threaded	5.5 kg/cm ²	½ " X 1 "
5.	SAC main Campus, 3915	LIN-3	Keystone	Threaded	15.0 kg/cm ²	1 ¼ " X 1 ½ "
6.	SAC main Campus, 3915	LIN-3	Sebim	Threaded	15.0 kg/cm ²	½ " X 1 "
7.	SAC main Campus, 4601	41 KL	Herose	Threaded	17.0 kg/cm ²	½ " X 1 "
8.	SAC main Campus, 4601	41 KL	Herose	Threaded	17.0 kg/cm ²	½ " X 1 "
9.	SAC main Campus, 5149	12 KL	Herose	Threaded	17.0 kg/cm ²	½ " X 1 "
10.	SAC main Campus, 5149	12 KL	Herose	Threaded	17.0 kg/cm ²	½ " X 1 "
11.	SAC main Campus, 5149	03 KL	Rockwood	Threaded	10.0 kg/cm ²	½ " X ¾ "
12.	SAC main Campus, 5149	03 KL	Rockwood	Threaded	10.0 kg/cm ²	½ " X ¾ "
13.	SAC, New Bopal campus, 8498	T1A	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
14.	SAC, New Bopal campus, 8498	T1A	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
15.	SAC, New Bopal campus, 8498	T1B	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
16.	SAC, New Bopal campus, 8498	T1B	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
17.	SAC, New Bopal campus, 8498	T1C	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
18.	SAC, New Bopal campus, 8498	T1C	Herose	Threaded	12.0 bar,g	1 ½ " X 2 "
19.	SAC, New Bopal campus, 8498	T2	Herose	Threaded	12.0 bar,g	½ " X 1 "
20.	SAC, New Bopal campus, 8498	T2	Herose	Threaded	12.0 bar,g	½ " X 1 "

Note: Quantity of Safety Relief Valve for pressure testing may be increase/decrease during time of testing and payment shall be made on pro-rata basis. Supplier shall quote the prices on per valve basis.