

Reasoned Document for Final Draft Specification no. TI/SPC/PSI/TRNPWR/3201

SN	Clause No.	Specification description	Comment of Firm	RDSO Remark on the comment
1.	1.5.12	Thermo Siphon Filter System is to be provided for absorbing the moisture present in the insulating oil with the natural convection.....	M/s APPSIL We recommended exclusion of this clause. Reason: Thermo siphon system is not required as air cell and silica gel breather are being used for avoiding moisture entry into the transformer. Thermo syphon filter system is not used presently as per the latest industry practices. Nowadays, mineral oil properties are much better compared to olden days. Alternatively, maintenance free breather can be used.	Comment of the firm is accepted in view of the reasons mentioned by the firm. It is also mentioned that per the specification, two no. silica gel breathers are to be provided. Thus One breather is always in use.
2.	1.5.13 Nitrogen injection fire prevention and extinguishing system has to be provided only with the transformers which are with ON-load tap changers.	M/s APPSIL We fully agree with this recommendation/amendment regarding NIFPES requirement.	Noted
3.	1.5.4 Shroud Pressure relief Device will be used and have provision of discharge of oil from PRD to safe place by closed pipeline.....	M/s APPSIL It shall be designed to operate to release internal pressure at preset value without endangering the equipment or operator and shall be of instantaneous reset type. Shroud Pressure relief Device (applicable to main tank only) will be used and have provision of discharge of oil from PRD to safe place by closed pipeline. This avoids hazards of fire and it is safe to persons working near Transformer & it is environmental friendly. Reason: shroud pressure relief device is not feasible for OLT as there is a very little space on OLTC head	Firm comment is accepted in view of the mention clarity in the specification.
4.	3.8.1	The BCTs shall conform to IS: 2705 and meet with the stipulations in clause 5.1(20) of this specification	M/s APPSIL The BCTs shall conform to IS: 2705/IS: 16227 and meet with the stipulations in clause 5.1(20) of this specification Reason: IS:2705 is replaced by IS:16227	Accepted
5.	6.2.1.1	Oil leakage test: The transformer with its radiators, conservator tank and other parts, fittings and accessories completely assembled shall be tested for oil leakage by being filled with oil conforming to IS: 335, type-II (Para 6.3.8.9 of this specification) at the ambient temperature and subjected to a pressure corresponding to twice the normal	M/s APPSIL Oil leakage test: The transformer with its conservator tank and other parts, fittings and accessories without radiators & fans completely assembled shall be tested for oil leakage by being filled with oil conforming to IS: 335, type-II (Para 6.3.8.9 of this specification) at the ambient temperature and subjected to a pressure corresponding to twice the normal static oil head or to the normal static oil head plus 35 kN/m ² (0.35 kgf/cm ²), whichever is lower, the static oil head being measured at the base of the tank. This pressure shall be maintained for a period of not less than 12 h, during which time no leakage shall occur. Reason: We would like to offer the Transformer for routine test in fully assembled condition without radiators and fans “ to RITES/RDSO inspector due to the	Comment of the firm is not accepted due to following reasons; Visual Examination is the part of the routine test. During the visual examination transformer should be in the full assembled condition. For the dimensional measurement, assembled transformer is required. In one of the case in past, during the oil leakage test by RDSO, the

		static oil head or to the normal static oil head plus 35 kN/m ² (0.35 kgf/cm ²), whichever is lower, the static oil head being measured at the base of the tank. This pressure shall be maintained for a period of not less than 12 h, during which time no leakage shall occur	<p>following reasons:</p> <ul style="list-style-type: none"> We are sourcing above components from RDSO approved vendors only and meeting the 100% requirement as per RDSO specification. Fans are not required during routine test as per latest specification. Radiators are being 100% pressure tested as well as type tested as per RDSO specification at supplier end. No case of oil leakage observed for more than 10 years from radiator during routine oil pressure testing being witnessed by RITES/RDSO inspector. No case of oil leakage observed for more than 10 years from radiator supplied to various OEM/EPC contactors. 	oil leakage from radiators has been found in a make.
6.	11.1	The Tenderer shall quote separately for the following essential spares for every lot of up to 5 transformers or part thereof:	M/s APPSIL The Tenderer shall quote separately whenever mentioned in "NIT/RFQ/Tender" for the following essential spares for every lot of up to 5 transformers or part thereof:	The complete clause may be removed from the specification as the spare requirement should be based on the conditions of the PO.
7.	11.1.1	One set of primary coil, secondary coil and tapping coil.	M/s APPSIL We recommend exclusion of this item from spares. In many cases, these set of coils are not used in site.	
8.	Annexure 3 SN 66	Are arcing horns provided for primary and secondary bushings?	M/s APPSIL This can be removed from GTP as arcing horns removed.	Accepted Para may be modified accordingly.
Comments received on Annexure-1 of specification (NIFPES)				
9.	1.0	The scope of this specification covers design, engineering, manufacture, supply and testing at works before dispatch.....	RDSO Internal Comments Scope should be read as under "The scope of this specification covers design, engineering, manufacture/ integration , supply and testing at works before dispatch....."	Para may be changed as per the received comment.
10.	2.1	Nitrogen Injection system shall be used to prevent the transformer explosion and possible fire, in the case of internal fault and such acts as a fire preventer. In certain cases, tank explosion cannot be prevented and transformer oil catches fire. In such cases and also in the event of fire by external causes, it shall acts as firefighting system. In either way it shall protect the transformer and	M/s HSE ENGINEERS PVT.LTD. Accepted. It is observed in major scenario, that occurrence of fire incidents in the Transformer is mainly because of external failure/disaster. In this context please refer CIGRE-537 guidelines. For external protection of the Transformer as well as for safety purpose, herein we would additionally recommend provision & incorporation of Automatic Fire Detection and Fire Protection System viz. Automatic and Microprocessor based System consisting of Hollow Metallic Tube Linear Heat Detection and Water Mist System which would ensure safety and thus minimise external fires as well as frequent power supply shut down would not be required. Also please refer CIGRE-537 guidelines for Water Mist type Suppression System which is an advantageous firefighting system. From email ID: isecurities@rediffmail.com	<p>The water mist type NIFPES is a new product in Indian Railways.</p> <p>The development of new product is governed by a different RDSO ISO procedure. This cannot be incorporated in the revision of specification.</p> <p>Therefore the comments may not be accepted.</p>

		eliminate or minimize the post fire damages. Thus, the system shall be suitable for protecting the transformer tank from explosion and also transformer, OLTC and cable box from fire.	<p>NIFPS is the prevention system working for the internal fire of the transformer. It will be better if the additional external protection is also available with the system.</p> <p>Request to make the specification generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>Noted and accepted. As per CIGRE-537,</p> <p>The most of the fire cases in transformer occurs due to external failure.</p> <p>In addition to NIFPS, it is suggested that External fire detection and protection system should also be provided to safe guard the transformer from major external fire. Thus External Microprocessor based Linear Heat detection system coupled with water mist system should be included in specifications.</p> <p>By Incorporating above, Transformer shall be well protected and thus avoid any shut down in power supply. The traditional water based fire fighting systems is that the Water Mist systems require much less water as they uses have smaller water droplet high pressure water mist systems).</p> <p>As heat absorption is a function of surface area and not volume, smaller droplets mean more surface area are available and therefore faster heat absorption for same quantity of water or equal heat</p> <p>Absorption with much less water. When a droplet of water vaporises to steam, it expands by approx. 1,600 times. Water mist is quickly converted to steam that smothers the fire and prevents further Oxygen from reaching it. At the same time, the evaporation creates a significant cooling effect of Combustion gases and blocks the transfer of radiant heat.</p> <p>As per CIGRE-537 clause no:7.3.5.2 Water Mist is an efficient fire-fighting medium. The traditional water based fire fighting systems is that the Water Mist systems require much less water as they uses have smaller water droplet high pressure water mist systems).</p> <p>As heat absorption is a function of surface area and not volume, smaller droplets mean more surface area are available and therefore faster heat absorption for same quantity of water or equal heat</p> <p>Absorption with much less water. When a droplet of water vaporises to steam, it expands by approx. 1,600 times. Water mist is quickly converted to steam that smothers the fire and prevents further Oxygen from reaching it. At the same time, the evaporation creates a significant cooling effect of Combustion gases and blocks the transfer of radiant heat.</p>	
11.	3.1.5	Oil drain pipe with drain valve.	<p>M/s HSE ENGINEERS PVT.LTD.</p> <p>The offered product / NIFPS consists of Oil Drain Pipe including Oil Drain Valve and due to this oil is drained straight to oil pit which avoids it from entering into the Fire Extinguishing Cubicle (FEC).</p> <p>From email ID: isecurities@rediffmail.com</p> <p>Oil drain valve may or may not be the part of FEC.</p> <p>Request to make the specification generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>Our system having Oil drain pipe with oil drain valve.</p> <p>Our system drains the oil directly to oil pit without entering to FEC.</p>	Comments may be accepted for Oil drain valve may or may not be the passing through FEC as different NIFPES manufactures may have different designs, but NIFPES manufacturers to ensure that the all the functional requirements are fulfilled.

12.	3.1.8	Isolation valves for oil drain pipe and nitrogen injection pipe with necessary flanges shall be provided on top of the Fire Extinguishing Cubicle (FEC) for connecting oil drain and nitrogen injection pipes with transformer.	<p>From email ID: isecurities@rediffmail.com</p> <p>Isolation valve & Nitrogen injection pipe can be located anywhere, may be inside FEC or outside FEC as per design. Request to make the specification generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>Isolation valve for nitrogen injection is provided on the top of the FEC. Oil Drain Valve is directly connected to Oil Drain Pit thus the isolation Valve over FEC is not required in our system. Instead of passing high pressure and hot oil through the FEC .</p>	<p>There are at least 04 valves from which gas is injected in the transformer tank. Therefore, for isolation at a single location, Isolation valve in the nitrogen injection pipe from the cylinder is to be provided.</p> <p>Since the comment of oil drain pipe may or may not be the part of FEC has been accepted, existing para may be modified as,</p> <ul style="list-style-type: none"> • Isolation valves for nitrogen injection pipe with necessary flanges shall be provided on top of the Fire Extinguishing Cubicle (FEC) for connecting nitrogen injection pipes with transformer. • Isolation valves for oil drain pipe with necessary flanges shall be provided at suitable location for connecting oil drain pipes with transformer.
13.	3.1.11	Individual mechanical locking arrangement for nitrogen release as well as oil drain to avoid unnecessary operation during maintenance and/or testing of transformer and /or NIFPES system	<p>M/s HSE ENGINEERS PVT.LTD.</p> <p>We recommend to amend the referred clause 3.1.11 of Tech. Specs as may be applicable:- <u>System consisting of Mechanical Valve:</u> “For preventable functioning / operation especially at the time of Maintenance / Testing of the NIFPS/Transformers; it is recommended to provide individual locking arrangements suitably for release of nitrogen and draining of oil.” The offered product / NIFPS consists of the locking arrangement which is utilized during the maintenance works. The Fire Extinguishing Cubicle FEC consists Selector Switch which can off-power during operation of the system</p> <p>From email ID: isecurities@rediffmail.com</p> <p>The clause is applicable for the vendor using mechanical valve, but the vendors those who are using the electrically operated or motorised, the system is not applicable for them. Request to keep option open for both the cases</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>The clause shall be modified as follow: “Individual mechanical locking arrangement, if applicable, for nitrogen release as well as oil drain to avoid unnecessary operation during maintenance and/or testing of transformer and /or system” – This is applicable for system using mechanical valve. Locking arrangement is given in our system during the</p>	<p>Comment may be accepted for increasing the sources of the NIFPES as different manufacturers have different designs.</p> <p>Clause may be modified as below “Provision shall be provided to avoid unnecessary operation during maintenance and/or testing of transformer and /or NIFPES system”.</p>

			maintenance and the electrical operation of the system could be cut off by selector switch in FEC.	
14.	3.2.1	Control Box should be microprocessor based compatible to be interfaced with existing RTU for Railway Traction SCADA system. For communication with SCADA, Control Box shall have provision for interfacing with RTU through RS485 over MODBUS protocol.	<p>RDSO Internal Comments</p> <p>Should be modified for ensuring the responsibility of interface of NIFPES with SCADA. Scope of witnessing the interface of NIFPES with SCADA should also be included.</p>	Para may be modified and it has been mentioned in Para 10.0(c) that "Transformer manufacturer's representative shall ensure that the interfacing of NIFPES with SCADA has been completed and shall be witnessed by the Zonal Railway".
15.	3.2.2	Control box shall have activating, monitoring devices and line faults indicators. It should have audio visual alarm indication and push button switches for test response.	<p>M/s HSE ENGINEERS PVT.LTD.</p> <p>It is recommended to adhere to following features so that during any emergencies, this shall ensure necessary activation/operation of the System at the Control Room.</p> <p>i) Necessary activation of the System at the Control Room must be provided which is reliable during any DC Power failure.</p> <p>ii) Above failsafe / reliable feature would also diminish any danger to human life considering that the Transformer and FEC are in same location, thereby increasing risk of human lives, during any emergencies. Hence necessary activation of the System at the Control Room is recommended.</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>The system should have a provision, to activate the NIFPS system in control room in case of DC power failure. Such operations in ambiguous situation during exigency. However the understating is that the FEC is near transformer, and hence any human intervention near FEC is putting human life into danger during exigency. So it is advisable to have such kind of operation from control room only. This provision of operation will help to ensure the emergency activation of system in control room in case of exigency.</p>	<p>Already in the Specification it is mentioned that Control Box should be provided with Auto & manual mode (electrical operation).</p> <p>Indian railways TSSs are installed by with sufficient DC battery with continuous charging. Comments are not accepted to make a mandatory requirement of providing additional DC battery in the control box of NIFPES.</p>
16.	3.4	Fire detectors shall be specially designed to generate an electrical signal to the NIFPES system after sensing higher temperature. Fire detectors are to be fixed on transformer tank top cover. The number and location of detectors are to be decided such that entire transformer tank top including tap	<p>RDSO Internal Comments</p> <p>UL/CE/Other required certification for fire detecting sensors should be included.</p> <p>RDSO Internal Comments</p> <p>The provision of alarm before reaching the set temperature/activation of NIFPES should be included. Supplier shall specify the replacement/maintenance plan of fire sensor used in NIFPES.</p> <p>M/s HSE ENGINEERS PVT.LTD.</p> <p>The offered product / NIFPS is confirming to standards</p>	<p>In view of the make in India Concept, foreign certification may not be added in the specification. Requirement of type test report of detector is already mentioned in the specification.</p> <p>Existing OTI & WTI already monitor the temperature and contacts are being utilised alarm and tripping of the transformer, it is not required for including this</p>

	<p>changer is being covered. There shall be at least one detector in area of 800mm radius.</p>	<p>& guidelines viz. CIGRE – 537 Guideline for Transformer Fire Safety Practices as well as the U.S Department of Interior Bureau of Reclamation (Volume 3-32). <u>Additionally, it is recommended to incorporate few more salient features:-</u></p> <ul style="list-style-type: none"> • Continuous Detection – every millimetre of the detection tube acts as a detector. • Highly reliable, Fastest and Robust type of detection. • Highly sensitive, intelligent and microprocessor based evaluation unit. • Sturdy, unaffected by high temperature, heavy rainfall, winds etc., • High resistance to electromagnetic and mechanical interferences. • Inbuilt self-diagnostics to monitor the healthiness of the system. • Unique Fail Safe features viz. System functions normally, gives alarm, detects the fire and actuates the extinguishing system even if any of the external signal cable is cut, Decentralized System, Capability to give alarms in the event of power failure, cut of power cables; Capability to give leakage / damage of detection, fault in pressure, etc. • Re-usable type detection element – overrides installation cost. • Class 1 type heat detection with UL (USA) / VdS (Germany) approval. • The Detection system shall be configurable for rate of rise and maximum temperature at two different alarm thresholds. • The Detection system shall have de-bugging/built in self test facilities. • Highly versatile – free from false alarm and failsafe. • Fast response – minimizes fire damage. • Proven System. <p>From email ID: isecurities@rediffmail.com Heat sensing area of 800 mm radius is applicable for point detectors. The vendors offering Liner Heat detection system, it is not applicable. Request to make the speciation generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited We manufacture the NIFPS System, conforming the CIGRE – 537 Guideline for Transformer Fire Safety Practices And U.S Department of Interior Bureau of Reclamation Volume 3-32 For better system of Transformer Fire Protection PI add following points may be implemented: 1. The fire detector shall be UL listed /FM Approval/ VdS approved Linear heat detectors 2. The detector shall have facility to nullify the</p>	<p>requirement with detector also.</p> <p>The sensor requirement and requirement of test report is already mentioned in the specification.</p> <p>Considering the comments, Para may be modified as below;</p> <p>There shall be at least one detector in area of 800mm radius in case of point detector. If Linear/Cable type detector is used then maximum separation between detectors on the tank top should be 1600mm and the total length of the used detector should be minimum twice the perimeter of top of tank including tap changer.</p>
--	--	---	--

			<p>atmospheric changes</p> <p>3. The detector shall be freely / site programmable for two parameters i.e., absolute pressure / temp. & max. pressure / temperature</p> <p>4. The detector shall have self-diagnostic feature to detect any fault into the detection system</p> <p>5 The detector shall have inbuilt memory to store faults / events, which can be downloaded to PC / laptop for further analysis.</p> <p>Heat sensing area of 800 mm radius is applicable for point detectors. We are offering Linear heat detection system, having hollow metallic stainless steel tube, shall be laid out on entire transformer top surface and bushing.</p>	
17.	4.3 & 4.4	<p>An electrical push button in the Fire Extinguishing Cubicle (FEC) for activating the NIFPES.</p> <p>Manual operation form Fire Extinguishing Cubicle (FEC) in case of DC supply fails.</p>	<p>M/s HSE ENGINEERS PVT.LTD.</p> <p>It is further recommended to adhere to following features so that during any emergencies, this shall ensure necessary activation/operation of the System at the Control Room.</p> <p>i) Necessary activation of the System at the Control Room must be provided which is reliable during any DC Power failure.</p> <p>ii) Above failsafe / reliable feature would also diminish any danger to human life considering that the Transformer and FEC are in same location, thereby increasing risk of human lives, during any emergencies. Hence, necessary activation of the System at the Control Room is recommended.</p> <p>Our System is having provision of battery back-up which ensures necessary activation/operation of the System at the Control Room, without interruption, during the DC Power failure,</p> <p>From email ID: isecurities@rediffmail.com</p> <p>Vendor may arrange the battery backup in case of power failure in FEC.</p> <p>Request to make the speciation generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited</p> <p>Such operations in ambiguous situation during exigency. However the understating is that the FEC is near transformer, and hence any human intervention near FEC is putting human life into danger during exigency. So it is advisable to have such kind of operation from control room only. And hence we are providing the special battery back up in control room in case of DC power failure, the system can very well be operated from control room.</p>	<p>Indian railways TSSs are installed by with sufficient DC battery with continuous charging. Comments are not accepted to make a mandatory requirement of providing additional DC battery in the control box of NIFPES.</p> <p>In view of the received comment that "human intervention near FEC is putting human life into danger during exigency" the requirement of, 'An electrical push button in the Fire Extinguishing Cubicle (FEC) for activating the NIFPES can be removed'.</p> <p>Considering the comments received, existing clause may be modified as below,</p> <p>The operation of the NIFPES should also be possible in case of failure of 110V DC Supply of TSS.</p>
18.	4.4	Manual operation form Fire Extinguishing Cubicle (FEC) in case of DC supply fails	<p>RDSO Internal Comments</p> <p>Should be redrafted as below</p> <p>Manual operation form from Fire Extinguishing Cubicle (FEC) in case of DC supply fails failure</p>	Typographical corrections, to be incorporated.
19.	5.5	System operation in manual mechanical mode i.e. in case of Sub-	<p>M/s HSE ENGINEERS PVT.LTD.</p> <p>In case of DC power failure at the power substation; there is provision of activation by push button in the</p>	Considering the comments received and increasing the

		Station DC supply failure	<p>System for operation in electrical mode with have additional battery back-up.</p> <p>From email ID: isecurities@rediffmail.com Vendor may arrange the battery backup in case of power failure in FEC. Request to make the speciation generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited System will operate in electrical mode for that we can provide the additional battery backup, in case of power failure in substation, which will be activated by push button.</p>	<p>sources of NIFPES, existing clause may be modified as below,</p> <p>The operation of the NIFPES should also be possible in case of failure of 110V DC Supply of TSS.</p>
20.	6.0	OTHER REQUIREMENTS FOR SYSTEM INSTALLATION:	<p>RDSO Internal Comments Scope of respective firms for items mentioned under clause 6.0 should be laid out clearly.</p>	Scope of firms (NIFPES or transformer) shall be added in the specification to avoid ambiguity.
21.	6.6	Pipe connections between transformer to Fire Extinguishing Cubicle (FEC) and Fire Extinguishing Cubicle to oil pit. The pipes shall be of galvanized iron material.	<p>From email ID: isecurities@rediffmail.com Pipe may or may not be galvanized. It may not be the mandatory requirement. Request to make the speciation generic for all vendors.</p> <p>M/s Vimal Fire Controls Pvt. Limited The pipe shall be CS/MS because during site installation it may require to weld, so the galvanisation coating will be affected. We therefore suggest to colour the pipe after installation and commissioning instead of using galvanising pipe.</p>	<p>Comments are not accepted.</p> <p>Life of galvanized pipes be more considering the aspect of rusting. At the weltd portion suitable zinc coating may be provided by the firm.</p>
22.	6.8	In order to place the fire Extinguishing Cubicle, plinth shall be constructed as per the drawing provided by the manufacturer	<p>M/s Vimal Fire Controls Pvt. Limited Accepted and noted please mention the same as NIFPS manufacturer.</p>	Accepted, clause may be modified as, “ In order to place the fire Extinguishing Cubicle, plinth shall be constructed as per the drawing provided by the NIFPES manufacturer”
23.	7.0 (7)	Sheet of FEC, Control Box & Signal Box: Steel sheet of thickness not less than 2mm	<p>RDSO Internal Comments Material detail of Fire Extinguishing Cubicle (FEC) must be mentioned in specification inline of earlier approved specifications.</p>	Para can be replaced as below: Sheet of FEC, Control Box & Signal Box: Steel sheet shall be as per grade CR 2 of IS: 513, part-1. Thickness shall not be less than 2mm.
24.	8.0	Cabling:	<p>M/s Vimal Fire Controls Pvt. Limited The specification of cables depends on voltage drop wrt the distance of control room. So, the cabling details should be confirmed during design calculation and details engineering.</p>	Requirement of FRLS and is not related with distance with control room, no change is required in the para.
25.	9.0	Monitoring of the health of the cables: System should also monitor the health of the cable used for connection of the detector. Also the healths of the	<p>M/s HSE ENGINEERS PVT.LTD. Only visual checking of the Cables may be possible at Site.</p> <p>From email ID: isecurities@rediffmail.com Not required for cables. Request to make the speciation generic for all vendors.</p>	Since all the comments have mentioned to remove the para, para may be removed.

		coil of the operating equipment of the oil drain valve and nitrogen injection valve should be monitored by the system	M/s Vimal Fire Controls Pvt. Limited Online health check-up of power cable is not feasible, so this clause to be removed to make the specification generic.	
26.	12.0	Detailed layout drawing along with the equipment drawings and complete bill of materials shall be submitted to RDSO through transformer manufacturer for approval.	RDSO Internal Comments Detailed layout drawing, electrical circuit diagram along with the equipment drawings and complete bill of materials shall be submitted to RDSO through transformer manufacturer for approval.	May be added as an improvement
27.	13.2 (ii)	IP 55 protection certificate of the pressure reducer or pressure regulator and pressure gauges provided in the FEC.	M/s Vimal Fire Controls Pvt. Limited The pressure regulator & pressure gauges are mechanical items, those are installed in the IP-55 electrical panel, and hence the IP-55 of mechanical items like pressure regulator or pressure reducer and pressure gauge are not required. In fact the clause to be changed as IP – 55 is required for FEC panel housing all the requisite equipment's required for system operation along with required puncturing for pipes on top & cable entry from bottom.	Considering the comment requirement of IP 55 protection certificate of the pressure reducer or pressure regulator and pressure gauges may be removed.
28.	15.0	Suitable schematic diagram plates made of stainless steel or anodized Aluminium with black lettering and lines shall be fixed on the inside surface of the Control Box and FEC Cubicle.	M/s HSE ENGINEERS PVT.LTD. We will have to look into technical details during engineering documentation stage and shall be provided as applicable. From email ID: isecurities@rediffmail.com Not required. M/s Vimal Fire Controls Pvt. Limited Control box & FEC circuit drawing contains 4-5 pages, hence it is not feasible to provide SS schematic Diagram Plates in the FEC & Control Box. The details drawings will be submitted in hard & softcopy at the time of supply.	Comments are not accepted. For the user reference at site, it is required to be provided inside the cubicle (can be provided at inner side of closing door). This practices is being followed in many of the TSS equipments.
29.	16.2	It should be checked that Circuit diagram of the Control Box and FEC Cubicle are provided in the cubicles	RDSO Internal Comments It should be checked that Electrical Circuit Diagram of the Control Box and Fire Extinguishing Cubicle are provided in respective cubicles as per para 15.0 along with coding of terminals /control wires.	May be added as an improvement
30.	16.4	Functional Test of Transformer Isolation Conservator Valve (TCIV):	From email ID: isecurities@rediffmail.com Required for mechanical valves, not for electrically operated valves M/s Vimal Fire Controls Pvt. Limited This is not applicable for our system as the TCIV is electrically operated. We can test the ball valves if required. As per latest technology, now a days the TCIV valves are electrically actuated. So, this type of functional test related to mechanical flow rate is not applicable	Considering the comments received and increasing the sources of NIFPES in the specification, both options for the TCIV i.e. electrically motorized operated or oil flow based can be mentioned.
31.	16.	Live demonstration test	RDSO Internal Comments	Scope of witnessing may be

	7	in auto mode:	Scope of witnessing the live demonstration in auto mode should be included in clause no. 16.7. Whether the demonstration be carried out at some lab or at the TSS.	added in the para for more clarity in specification. It can be mentioned in the specification that, demonstration is to be carried out at the works of NIFPES Manufacturer.
32.	16.7.1.2	The time from the nitrogen injection start to fire quenched shall be measured by stop watch.	M/s HSE ENGINEERS PVT.LTD. It is recommended to withdraw the referred clause/condition. From email ID: isecurities@rediffmail.com Practically fire inside the transformer possible as there is no oxygen inside the oil filled tank. So fire quenching cannot be measured. This clause to be removed M/s Vimal Fire Controls Pvt. Limited During demonstration, practically fire inside the transformer is not possible as there is no oxygen inside the oil filled tank. So fire quenching cannot be measured. This clause can be review and removed.	Comments are not accepted. It appears that clause has not been understood before comments, following is clarified The clause has been mentioned for live testing at the works of NIFPES manufacture. This is done on a dummy transformer not in actual transformer. In dummy transformer an opening can be made on top for actual verification of system in case of fire.
33.	16.7.1.3	In Fire Extinguishing Mode.	RDSO Internal Comments The procedure of raising the temperature of the tank and monitoring the reading of the temperature indicator should be specified. What would be the method/procedure for raising the temperature of tank till the fire detector is activated?	Following can be mentioned in the specification; 1. The temperature of the oil to be increased by a suitable electric heater in the oil tank. 2. Heater is to be kept on till the fire detector is activated.
34.		Mounting of fire detector on transformer tank	RDSO Internal Comments Presence of air gap between LHD cable and metallic conduit inner bottom surface can't be ruled out. Air gap between LHD Cable & metallic conduit may offer additional thermal resistance and in turn may affect the heat sensing time of LHD cable.	A new Para may be added as NIFPES manufacturer to ensure that the condition of the sensor (i.e. covered in a mounting conduit or not) used for the third party testing lab, NIFPES live demonstration testing & actual installation at site should be same.
35.	16.7.4	Fire extinction period on commencement of Nitrogen Injection Maximum 30 seconds	RDSO Internal Comments Clause no. 16.7.4 specifies the requirement for the extinction period on commencement Nitrogen injection. Therefore, the details of fire ignition method, position of fire with respect to sensor, transformer oil and surface temperature should be included in the specification for assistance/guidance of witnessing official, because no guideline/standard is available for testing of NIFPES currently.	Details may be added in the specification a per the comments for the assistance of the inspecting officials.

36.	-----	<p>M/s Vimal Fire Controls Pvt. Limited</p> <p>M/s We recommended to add following feature on field experience.</p> <p>A. A differential pressure switch will be provided in nitrogen purging pipe line to detect nitrogen leakage due to in proper sealing of nitrogen purging valve.</p> <p>B. The Sight glass shall be provided outside of FEC on drain line to detect leak oil due to in proper sealing of oil drain valve.</p> <p>C. TCIV: the Field experience suggests that gravity flow type TCIV causes following problems.</p> <ul style="list-style-type: none"> • It fails to close if oil velocity not to desire level. • During oil filtration due to high succession rate oil filtration machine, TCIV gets close and causes partial vacuum in tank and prevents effective oil filtration in tank. • To overcome above the issues it is recommended to motorised valve to achieve positive closing and positive opening operation with full passage open. <p>NIFPS health Check-up: Online Health Check-up of system by operating the valves (TCIV, ODV & NIV), without draining of oil and injecting nitrogen into the system.</p> <p>Justification: As the system (valves – TCIV, ODV & NIV) is in idle condition in normal stage, so to ascertain the actual working of system in to exigency, online health check up provisions should be made mandate, without isolating the transformer.</p>	<p>A. Already pressure regulator and low cylinder pressure is mentioned. It is not required. Comment may not be accepted.</p> <p>B. It is not accepted to make it a mandatory requirement, Oil level gauge is already provided in the transformer.</p> <p>C. Till date any issues raised in the comment has not been received in this office from Zonal Railways. However, option of motorized valves also been accepted as discussed in earlier para.</p> <p>It is advised to submit the comment in detail with procedure i.e. how NIFPS health Check-up will be conducted by the NIFPES System and how it will be verified.</p>
-----	-------	---	---