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OVERALL PHILOSOPHY INSTRUMENTATION IN KRALUPY RAF

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1 Operating philosophy

All Process Units under the scope of this project shall be supervised and/or controlled from a New Control Room (NCB) - Unit 2520.

Instrumentation and Control Systems shall be designed to safeguard effective plant operation, quality of products, safety, energy consumption and to minimize pollution of the environment.

A Distributed Control System (DCS) shall be the main interface for panel operators for the process Plants.

The instrumentation and control systems shall be integrated with the system supplied for the FCCU, Re-instrumentation and other projects in the control room 2520.

2 Monitoring and control systems

All plant control, monitoring and visualization of process data shall be executed by the Distributed Control System . Operator interface shall be provided by a number of Operator Work Stations neatly arranged in the Central Control Room in 2520.
There is a strict requirement that no equipment like instrument panels, mimic panels or any other visualization or auxiliary equipment shall be mounted on the walls or on the ceiling in the NCB.

2.1 DCS

Schneider Electric (Foxboro) will be the DCS supplier. The delivery shall be based on the agreement between CRC and Foxboro. The scope of supply of Foxboro includes the delivery of IPS and F&G systems, process information system and the main distribution frames (MDF's). Foxboro will be responsible for the complete integration of these systems. The applicable standardisation, typicals and templating shall be based on the CRC as defined in the functional design specification (FDS) for the FCCU and Re-instrumentation project. A copy can be made available on request.

An overall integration test of all systems, including third party systems, with their communication is required at the DCS vendor premises.

Input failure should not cause plant upsets, where practical cripple mode operation should be incorporated.

The telecommunication facilities in the consoles shall be incorporated in existing system.

It shall not be permitted to install PLCs and similar electronic logic-type equipment in the plant. This equipment shall be located in the 2520 Instrument Interface Room and only after the approval of an exceptional CRC.

2.2 Package Units

Package Units shall be designed in accordance with DEP 32.31.09.31-Gen. - Instrumentation of equipment packages/ part E. The packages (reference each unit - P&ID section, "Advanced Process Control Diagram") shall be included in the CONTRACTOR's scope of work.
The control and IPF functionality shall be integrated in the DCS and IPS systems, unless otherwise in agreed with the principal. The field equipment shall be the same make and type as for the rest of the project, unless otherwise is agreed with the principal. The same manufacturer and type compression fittings shall be used throughout the project.

3 Measuring instruments

3.1 Quality Measurement (QMI)

An Analyzer Management and Data Acquisition System (AMADAS) is provided, the design shall be based on report MF 93-141028, latest issue as part of the FCCU project. All new QMI shall be provided with facilities for automated validation and calibration and connected to the systems.
All analyzers shall be installed in the Analyzer Houses, unless otherwise agreed with the Principal.
Specialized suppliers shall do the detailed engineering, construction and commissioning. The analyzer houses shall be prefabricated, including the analyzers and sampling systems, and tested at vendor premise.(DEP 32.31.50.13-Gen.Analyzer housing)

QMI shall be designed in accordance with:
- DEP 32.31.50.10-Gen. - On-line Process Analyzers

3.2 Flow, Level, Pressure and Temperature Transmitters

All field transmitters shall have Hart protocol and shall communicate in analogue mode to the DCS and IPS systems

A Plant Resource Manager Solution (PRM) shall be installed via multiplexers in the Main Distribution Frames. All transmitters shall be connected to this system. Contractor shall ensure that transmitter and valve vendors can supply full PRM functionality. In particular, maintenance diagnostic for valve positioners shall be available in PRM.
Transmitters shall meet signal specifications as laid down in SIOP ORRTL/96/0795 dated July 11th, 1996.

3.3 Flow Instruments

The selection of newly to install flow transmitters shall be in accordance with DEP 32.31.00.32-GEN. Vortex meters are the preferred choice. DP measurements should be considered as the last resort.
Flow shutdown measurements may be derived from the same primary element used for flow indication/control, provided separate sensors/amplifiers/power supplies are used.

Where square root flow signals are generated, these shall be linearised in the transmitter and not in the DCS. The only exception being where square root signal is required for calculations. The DCS shall be designed that flow factors can be changed automatically based on mode dependent density information obtained from external sources.
IF requested, flow measurements shall be compensated for pressure and temperature in the DCS.

Flow instruments shall be designed in accordance with DEP 32.31.00.32-Gen.

3.4 Level Measurement Instrumentation

The preferred level measurement technique is by differential pressure instruments for new measurements. Alternative measurement principles shall require Principal's approval. Level instruments shall be designed in accordance with DEP 32.31.00.32-Gen.
Level instruments shall have separate direct process connections. Level instrument for control and safeguarding shall have the same range where possible.

3.5 Pressure Measurement Instrumentation

Direct-mounted pressure switches shall not be used for process/utility applications.

Pressure instruments shall be designed in accordance with DEP 32.31.00.32-Gen.

3.6 Temperature Measurement Instrumentation

Thermocouple elements/assemblies shall be used for normal temperature measurements throughout the plant. For special high accuracy applications resistance thermometers shall be used. Thermocouple assemblies or resistance thermometers shall be equipped with head-mounted programmable mV-to-current converters with Hart protocol for TI applications (when temperature permits) and SMART Hart transmitters for control applications, critical applications and IPF applications.
Temperature instruments shall be designed in accordance with DEP 32.31.00.32-Gen.

3.7 Control valves, on– off valves

Diaphragm-type pneumatic actuators shall be preferred for the control valves and butterfly valves.

Wafer type control valves shall only be permitted for non-hydrocarbon service.

Spring-opening butterfly on-off valves should not be of the wafer or lug type but should have a valve body to allow removal of the valve from the piping system with the disc in 'open' position.

In-line welded control valves shall not be used.

All control valves shall be equipped with METSO fully smart electronic valve positioners with in-line diagnostic and connection to PRM.

Where transmission of valve position is required, proximity switches shall be used.

Eccentric rotary plug valves shall be used where possible for new valves. Self-cleaning trims shall be applied were ever possible. Pilot assisted trims shall not be used.

Control valves shall be designed in accordance with DEP 32.36.01.17-Gen. Initiative II for control valves should be applied.

3.8 Miscellaneous Instruments

Miscellaneous instruments shall be designed in accordance with DEP 32.31.00.32- Gen.

3.9 Instrument Installation

For Zone 2 classified areas, all instrument electrical junction boxes shall be certified EExe, material stainless steel. Cable entry into the junction boxes shall be bottom entry. Metal EEX(d) cable glands with proper earthing and stress relief of the cable armour shall be used. In areas with the occurrence of hydrogen sulphide(H2S) (these areas are designated under S432 and their annexes), must be stainless steel cable gland.

Intrinsically safe cabling shall be terminated in EExi certified junction boxes.

Armoured screened twisted pair cables shall be used for connection of individual instrument signals to field junction boxes. Multipair cables screened and armoured overall shall be interconnecting field junction boxes and Marshalling Cabinets in the Interface Room in the Main Control Centre. Overground cable run shall be laid in ladders. Non-armoured signal cables shall be protected by fully enclosed cable channels or conduit. All trunking, cable trays and cable channels shall be hot dipped galvanized.

Requirements for fire resistance cable trays will be addressed individually and approved by CRC.

All cable entries into CCR shall be sealed with MCT blocks.

Main Distribution Frames (MDF) and I/O Interface Cabinets (IFC) shall be fitted with terminal blocks fitted with split-tab/slide-on connectors.

Heat tracing of the instrument impulse tubing shall always be electric, EEx.

Instrument impulse tubings shall be 316 stainless steel or SANICRO as per DEP 32.37.10.11-Gen, Tube fittings shall be double-ferrule compression type with metric dimensions. Tubing on control valves shall be stainless steel.
The impulse lines shall be kept as short as possible. Same manufacturer and type compression fittings shall be used throughout the total project.

Direct acting solenoid valves shall be used.

Marking of cables in external areas will be done engraved plate affixed by stainless steel or copper wire min.0, 8mm with insulation.
Simple el. equipment (according to EN 50020) in EExi circuits will be added label " Jednoduché el. zařízení dle ČSN EN 50020 ", if not labeled by the manufacturer standard markings EX.

For instrument air distribution airlines refer to DEP 32.37.02.03-Gen. however, stainless steel shall be used instead of carbon steel.

The new instrument air distributor must always be:
• stainless steel material DN50-body vertical, max length 120cm.
• machinery connecting flange DN 25 on the top
• at least 4 pins in the hips
• reserve at least three outlets
• each outlet must be fitted with a stainless steel ball valve
• spare outlets must be fitted with a stainless steel ball valve and cap
• drain -stainless steel ball valve

Vent/bleed facilities as specified in DEP 32.37.10.11-Gen., (5.8) shall not be applied.

No test boxes shall be used for transmitters in the field.

For instruments Accesssibility see append 2.

3.10 Close Coupled Instruments

Isolation of close coupled instruments, e.g. pressure gauges, shall be made with a mechanical isolation valve a gauge block assembly - see MESC 60.98.55, of a double-block and bleed valve assembly according to MESC 77/165. The latter device should be preferred.

3.11 Remote Mounted Instruments

Use of a slim-line isolation should be preferred to a standard valve, refer to MESC 77/162.

4 Safeguarding of plant and equipment

4.1 Instrumented Protective System (IPS)

Programmable Logic Controllers (PLC) within the IPS shall be TUV approved. Solid-state fail-safe Logic Control Systems are not recommended and require COMPANY approval on a case-by-case basis as per Functional design specification.

Provisions for periodic testing of the IPS shall be incorporated.

It shall not be permitted to install PLCs and similar electronic logic-type equipment in the plant. This equipment shall be located in the 2520 Instrument Interface Room.

4.2 PLC based IPS

Refer to Functional design Emergency shutdown (ESD) switches shall be hardwired from the operator workstations to the IPS.

4.3 Measurement Validation and Comparison

The IPS and control transmitter signals shall be continuously compared within the DCS, using SIOP MVC (cusum) algorithm. A warning alarm will be generated to the operator if differences exceed a predetermined value. In addition Measurement Validation via the MVC (CUSUM) SIOP module in the DCS has to be installed for critical measurements, e.g. single level measurement at the bottom of column. A warning alarm will be generated to the operator if a predetermined value is exceeded. The signal from the IPS transmitter will be connected via a serial communication link from the IPS to the DCS. The ranges of both transmitters shall be identical.

Hardware testing facilities have to be implemented in case transmitters can not be tested automatically via transmitter comparison. In case valves need to be testing, as defined by the IPF classification, facilities for testing shall be made available to facilitate testing without major plant upsets to operation.

4.4 Sequence of Event Recorder (SER)

A SER shall be incorporated as per functional design specification.
The SER shall record the following signals:
- safeguarding alarms (IPS)
- fire and gas detection alarm
- MOS/OOS activation
- manual shutdown commands.

4.5 Alarm philosophy

IPS and pre-trip alarms shall be presented to the operator via the DCS consoles.

The alarm management system should be developed with the following objectives:
- Minimize the number of active alarms
- Maximize the information contained in the alarms
- Obtain effective presentation of alarms.

The following methods shall be applied to achieve these objectives:
- Alarm suppression techniques to suppress in the DCS, to alarms or groups of alarms that are not significant at certain times or for certain modes of operation, e.g. for process units or parts thereof which are out of operation and spare equipment not in use.
- First failure indication for equipment and process related safeguarding alarms in cases where a trip condition may result in a number of subsequent trips.
- An alarm list that ranks active alarms according to priority and time of occurrence.

Related alarms may be grouped together and a layered structure of annunciation screens should be provided.

No local panels are allowed. Package Units must be fully integrated into IPS and DCS displays.

5 DESIGN AND ENGINEERING

Instrument Engineering drawings and documents shall be prepared in a software format using SPI (IN TOOLS) as a part of existing CRC unified
SPI database. See CRC PPU 502 document.

The standardization and templating as developed for the CRC Kralupy shall be used and is in line with the Foxboro standardization. The project shall incorporated in the overall refinery data based.

Drafting of loop sheets shall be done via the smart loop and smart sketch features of the package. In case any other drafting is required, package AutoCad 14.0 shall be used for drawings after approval of Principal is obtained.
The documents and drawings shall be in accordance with DEP 32.31.00.34-GEN.

Process instrument systems shall be of electrical/electronic design, the use of pneumatic instruments shall be subject to COMPANY's approval.

Electrical design of field instrument systems shall be in accordance with the Czech Standards and IEC 79, and equipment shall be certified by a recognized testing authority.

For all hazardous areas, electrical instruments shall be intrinsically safe Ex ia/ Ex ib. Where safety barriers are required, these shall be the active-type with galvanic isolation.

All instrumentation used on the project shall be in accordance with the CRC List of Accepted Vendors and Instrument Equipment.

Instruments located in off-plot locations and on tanks shall be protected against lightning. CONTRACTOR shall take measure to ensure effects of the electromagnetic interference (EMC) are minimized. See DEP 32.37.20.10-Gen. (8.1). See also document "Lightning Protection and EMC Guideline".

5.1 Sparing requirements in DDS, IPS, FGS and other systems

In all systems, cabling, junction boxes etc. spare capacity to cater for modifications in a later stage of the project, additions during start-up and plant changes after start- up, hereafter called "capacity as needed for the project", "installed spare capacity" and "pre-wired spare capacity", shall be installed.
This installed spare capacity shall be as follows (see Figure 1)

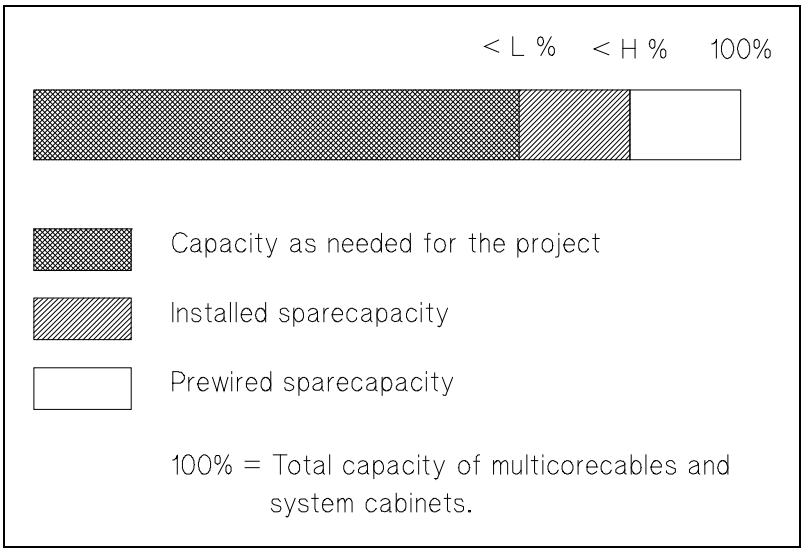

Figure 1, Required spare capacities

- Capacity as needed for the project: All cabling, DCS-components, DCS-slots, PLC I/O, CPU time, Communication bus capacity, Memory capacity, Disk capacity, Cycle time, etc. for realisation of the project.

- Installed spare capacity: Capacity of remaining and installed components, DCS-slots, PLC I/O, CPU time, Communication bus capacity, Memory capacity, Disk capacity, Cycle time, etc. after realisation of the project and which is readily available for use.
- Pre-wired spare capacity: Capacity of premiered 19" racks, PLC I/O racks, CPU time, Communication bus capacity, Memory capacity, Disk capacity, Cycle time, etc, readily available for use after installation of the appropriate circuit boards only. No wiring is to be required.
- 100% : Total capacity of each (Sub)Systems, Gateways, CPU-time, Communication bus capacities, Memory capacities, Disk capacities, Cycle times, etc. I/O capacity of installed I/O racks, other system cabinets cabling, MDF, and junction boxes.
- The values L and H are 70 % and 85 % respectively unless otherwise specified.

5.2 IPF study

Purpose of IPF study is to describe in complex risk management system in the area of instrumentation for concrete project. It is proceeded in conformity with requirements in DEP 32.80.10.10-Gen.

Before the IPF study is elaborated a study must defining function and roles of independent protection layers (for example HAZOP) must be created. One of these layers is also the security system IPS, in which IPF functions are implemented. Characteristics and parameters of risky situation for which it was decide to use instrumentation systems as a mean to reduce the risk are further investigated within the IPF study.

Definition of safety instrumental IPF functions and risks assessment is a team work, which is being carried out at the workshops. Representative of operations, technology and instrumentation department from CRC are always members of the team. So called facilitator is part of the team, who is acting as moderator and guarantor of adhering to IPS classification principles. Role of the facilitator may be executed only by person with valid certificate. Other members of the team are selected according to the nature of the project. Therefore also representatives of mechanical maintenance, electro and engineering departments may be part of the team (corrosion engineer, rotating specialist etc.) and other professions.

After the workshop the facilitator next to other issues with determine hardware configuration of tags (MooN) for all IPF function with taking into account the total PFD (Probability of Failure on Demand), which is set by SIL level. Result of IPF study is the final report, which summarises work of the entire team and service as basis for fitting, operation and maintenance of security IPS system (or its parts). Facilitator will issue the final report.

Minimum requirements for IPF study (minimum scope of final report):

A. BDEP phase:

- Scope and limits of the study (technological equipment range, which are subject to the study)
- General technical, technological and organizational premises, on which the study is built on
- Description of given technological unit/its part of technological project part
- List of evaluation team members
- Used documentation (for example PEFS, CE diagrams, etc.)
- Definition of safety instrument functions (IPF/SIF), their classification, meaning risk assessment and allocation of SIL safety integrity. It is documented by protocols about IPF classification.
- Setting hardware configuration of tags (MooN) of all IPF functions with taking into account total PFD (Probability of Failure on Demand), which is set by SIL level. It is documented by protocols about IPF classification.
- Setting IPF testing intervals with taking into consideration used types of IPS tests and their feasibility in actual operations. It is documented by list of IPF tests.

B. Within realization phase of the project IPS study is revised especially with taking into account changes from previous BDEP phase. Targets (in addition compared to BDEP):

- Creation of detailed IPS tests procedures for all used types of tests

Each protocol about IPF classification of each function must contain in minimum this data:

- Used tags, their architecture (MooN) and behaviour when claiming security function (for example LL, HH, Trip, valve Open, motor Stopped and others). It is valid for sensors, logical elements and end elements of security function.
- Purpose of the function (verbal description)
- Causes for claiming the function (verbal description, list of situations and frequency of claims in units per year)
- Consequences of function failure (verbal description)
- Categorization of total frequency of claim in RAM, impacts in all investigated areas (health and safety of persons, environment and economics) with relevantly selected SIL level.
- If may be applied: requirements for type of TSP valves tightness
- Parameter "Process Safety Time"
- Total selected level of SIL IPF function
- (Optional): Consequences of correct functioning of IPF function (false trip) with quantification of impacts in investigated areas (health and safety of persons, environment and economics) and possible justification calculation, if configuration of tags improving resistance against false trips is chosen (for example 2oo2)

List of IPF tests in final report must contain this information for each machine:

- Tag name of the instrument
- Type of instrument/equipment
- Medium (code or description of product/semi-finished product/medium)
- Selected frequency of test in units/year^{-1} (on basis of mathematic PFD calculation)
- Information whether test may be carried out under operation or during TA
- Type and description of test (In implementation phase a detailed description. Step by step test execution including roles and responsibilities of persons participating on the test)

Mathematic calculation of PFD must take into consideration especially:

- PFD of used independent protection layers others than Instrumentation (for example reverse valve, safety vent and others)
- Frequency of dangerous and safe failures of individual Instrumentation equipment depending on type of request and media.
- Factor of IPF test coverage
- Beta factor of individual tags in configuration "fault tolerant"
- While using diagnostic test (for example MVC) assumed factor of diagnostic coverage
- Present interval of TA´s (4 years)

Base of economic impacts of IPF function fail categorization having as consequence shut down to reduction of production of given technological unit, explicitly creates equation of losses on production (PLE), which actual version will be provided by CRC.

6 APPEND 1:

Hart tagnaming rules

All analog field Instruments shall be SMART type, fully preconfigured prior installation. Part of configuration shall be also tagname and descriptor for communication with PRM as follows:

a/ In tagname field : / max,. 8 characters /

First two characters are used for Process unit name, next for Measured variable name and Loop component name , and last ones for serial number with optional suffix.

Letters instead of numbers are used for some process units name.
Flow transmitter **24**11FIC003-FT stall use short name 11FT003
Control valve **24**11FIC003-VC stall use short name 11FV003
Temperature Transmitter **24**11TIC007-TT stall use 11TT007
Flow transmitter **25**11FIC003-FT shall use short name SDFT003.

b/ In descriptor field: full Smart Plan Instrument name stall be used.

Communication and drivers:

Communication SW for HART and PRM stall be part of delivery for each type of delivered instruments, including diagnostic tools unless otherwise specified.

7 APPEND 2.

SPECIFICICATION FOR INSTRUMENT ACCESSIBILITY REQIUREMENTS based on DEP

1. ACCESSIBILITY LEVELS
2. LOCATION AND ACCESSIBILITY
3. GENERAL INSTALLATION NOTES
4. MINIMUM ACCESSIBILITY REQUIREMENTS FOR PLANT INSTRUMENTS

1. ACCESSIBILITY LEVELS

Accessibility identifies the effort required for healthy human being to reach devices such as an instrument, measuring element, instrument process connection, instrument utility connection, block valve, sampling point for the purpose of operational attention or regular maintenance. It includes the ability to reach such device with all tools required to perform such operational attention or maintenance. In the context of this DEP, four accessibility levels are defined as follows.

- Permanent accessibility
A device is considered permanently accessible, if it is located not more than 0,5 m horizontally away from and not more than 1,7 m vertically above grade, platform or walkway, if no obstruction are in place and if such locations can be safely reached from there during plant operation.

- Limited accessibility
A device has a limited accessibility, if it is located not more than 1.0 m horizontally away from and at height between 1,7 and 4,0 m above grade, platform or walkway, if no obstructions are in place if such locations can be safely reached during plant operation by means of a mobile platform or ladder.

- Poor accessibility
A device has a poor accessibility , if it is located more than 4,0 m above grade, platform or walkway, or at any other location, that can be only safely reached during plant operation by installing temporary facilities such as scaffolding or cranes.

- Inaccessibility
A device is considered inaccessible, if it can not be safely reached during plant operation for the purpose of operational attention and maintenance.
1 LOCATION AND ACCESSIBILITY

Apart from the requirements for specific types of instruments as given in the relevant sections , field-mounted instruments shall be so installed considering the following aspects:

- On-line instruments are to be mounted on or at maximum distance of 1 m from the instrument process connection (s).
- The location shall guarantee a good representative measurement of the process conditions.
- Limited accessibility is acceptable for indicating instruments, providing that they can be properly read form a permanently accessible location.
- Instruments shall not be subjected of excessive vibration (e.g. on suction or discharge lines of pumps or compressors, etc.) or mechanical stresses, and are not to be exposed to temperatures which will influence the measurement .
- Heavy equipment such as control valves and inline flow meters of DN 100 and larger and all positive displacement meters and turbine meters should be accessible by mobile hoisting equipment. Where this is not possible, permanent hoisting facilities shall be considered.
- Instrument and their impulse lines shall be surrounded by sufficient free space to allow rodding-out of process connections and the removal of:
- Bolts, nuts and gaskets etc.
- Cover and enclosures, orifice plates from the orifice flanges,
- Removable parts from in-line flow meters.
- Internals from the control valve.

- Displacers from the displacer chambers.
- Thermometer elements from the thermo-wells.
- Special requirements for safe handling of toxic substances, as dictated by the relevant piping class.

For maintenance purposes, permanent and easy access used to be dominant factor in selecting the physical location if plant mounted instruments. Long impulse lines and additional ladders/platforms were resulting.
Major improvements in mean time between failure (MTBF) and remote diagnostics via “intelligent” communication has drastically reduced the need for on-the-spot maintenance of modern field instruments.
Appendix 1 provides the minimum accessibility requirements. However, local situations such labour cost may justify deviation from these requirements.

Note.
Irrespective of the minimum accessibility level given in Appendix 1, one should aim for an optimum accessibility, if this can be reached ad acceptable cost. Relocation of the piping take-off point during the engineering stage may for instance be feasible and would change the accessibility level of a pressure transmitter from limited to permanent at no additional cost.

2. GENERAL INSTALLATION NOTES

In-line instruments (such as in-line flow meters , control valves, orifice plates), strainers and heavy off line equipment (such as displacer level instruments and tank gauges) shall generally be installed by mechanical engineering, under the supervision of instrument engineering.

3 Minimum accessibility requirements for plant instruments.

process variable	Minimum accessibility requirements for plant instruments			
instrument type	permanent	limited see note below	poor	inaccessible
Note: Instruments in IPF service with test interval of two years or less shall be permanently accessible				
Analysers	To be judged on a case-by-case basis			
Flow				
Custody transfer, any type	X			
Coriolis - body			X	
- electronic		X		
Differential head type element: orifice/venturi			X	
Differential head type element: integral orifice		X		
Differential head type transmitter	X purged	X not purged		
Electromagnetic		X		
Flow limiters				X
Positive displacement	X			
Restriction orifice				X
Thermal dispersion		X		
Turbine	X			
Ultrasonic meter				
- body: clamp-on type	X			
- rest			X	
- electronics		X		
Variable area meters	X			
Vortex - body			X	
- electronics		X		
Level				
Custody transfer any type	X			
Capacitance type		X		
Differential head type transmitter	X purged	X not purged		
Displacer/float	X	X		
Radioactive(nuclear)				
-source		X		
- detector and detector electronic		X		
Radar		X		
Remote diaphragm seal		X		
Tank-gauging	X			
Tuning fork		X		
Ultrasonic device		X		

process variable	Minimum accessibility requirements for plant instruments			
instrument type	permanent	limited see note below	poor	inaccessible
Note: Instrumetns in IPF service with test interval of two years or less shall be permanently accessible				
Pressure				
gauges		X		
Switches	X			
Transmitters	X purged	X not purged		
Temperature				
Dial thermometers		X		
Resistance thermometers without transmitters			X	
Thermocouples without transmitters			X	
transmitters		X		
Final control elements				
Throttling control valves including all accessories	X			
On-off control valves	X local test	X remote test		
Regulators <DN 50, no pilot, clean service		X		
Regulators, all other types	X			
Actuators on fans, louvres, dampers, etc.		X		
Miscellaneous instruments				
Receiving indicators		X		
Local panels	X			
Junction boxes	X			
Flame detectors	X local test	X remote test		
Limit switches		X		
Manulally operated devices (switches/push buttons) and indication lamps	X			
Hook up materials				
Air filter and air filter regulator	X			
Isolating /vent and drain valves		X		
Purge needle valve		X		
Seal fluid refill connections and associated valves	X			

8 APPEND 3

Instrumentations documents and drawings.

1.D.1	Technická zpráva / Technical Report
1.D.1.1	Seznam dokumentace a výkresů pro instrumentaci / Summary of instrumentation documents and drawings
1.D.1.2	Identifikace základních údajů projektu / Identification and basic data of project
1.D.1.3	Podkladová dokumentace použitá v průběhu vývoje projektu / Background documentation used during project development
1.D.1.4	Rozdělení na provozní soubory a konstrukční objekty / Break down to process units and construction objects
1.D.1.5	Popisy řídících a bezpečnostních funkcí / Control and Safeguarding Narratives
1.D.1.6	Diagramy příčin a následků / Cause and Effect Diagrams
1.D.1.7	Protokoly o IPF klasifikacích včetně testovacích intervalů / IPF classification protocols including testing periods
1.D.1.8	Postupy testování IPF / IPF test procedures
1.D.1.9	Výpočty IS obvodů / IS loops calculations
1.D.1.10	Přehled nastavení alarmových a blokovacích hodnot / Alarm and Trip Setting list
1.D.1.11	Seznam rekvizic přístrojů instrumentace / Summary of instrumentation requisitions
1.D.1.12	Seznam položek napájených z elektro části (typicky 230 V AC) / List of items mains supplied (typically 230 V AC)
1.D.1.13	Detaily hodnocení prostředí (area classification) / Area classification details
1.D.1.14	Popis environmentálních aspektů / Environmental aspects description
1.D.1.15	Obecná specifikace měřících přístrojů / Measurements general specifications
1.D.1.16	Požadavky na požární detekci, principy výběru přístrojového vybavení / Requirements on fire detection systems, selection principles
1.D.1.17	Požadavky na plynovou detekci, principy výběru přístrojového vybavení / Requirements on gas detection systems, selection principles
1.D.1.18	Požadavky na radiokomunikační zařízení / Requirements on radio-communication devices
1.D.1.19	Požadavky na systém CCTV, principy výběru přístrojového vybavení / Requirements on CCTV systems, selection principles
1.D.1.20	Obecná specifikace analyzátorů / Analyzers general specification
1.D.1.21	Specifikace kalibračních plynů pro analyzátory a chromatografy / Specification of calibrating gasses for analyzers and chromatographs

1.D.1.22	Obecná filosofie použití systémů DCS/IPS/PLC/EPS/CCTV/GDS / DCS/ IPS/PLC/EPS/CCTV/GDS system usage general philosophy
1.D.1.23	Popis a požadavky na napájecí systém / Power supply system description and requirements
1.D.1.24	Specifikace uzemnění a stínění / Grounding and shielding specifications
1.D.1.25	Princip výběru přístrojů instrumentace / Instrument selection principles
1.D.1.26	Požadavky na kabelové trasy / Requirements on cable routes
1.D.1.27	Systém značení přístrojů, kabeláže a propojovacích kabinetů / System of marking instruments, cables and termination boxes
1.D.2	**Specifikace přístrojů / Instrument Specification**
1.D.2.1	Seznam přístrojů / Instrument index
1.D.2.2	Specifikační listy přístrojů instrumentace (včetně místních měření) / Instruments engineering data sheets (including local measurements)
1.D.2.3	Složené manuály instrumentace (viz DEP 32.31 .00.34-Gen) / Composite instrument manuals (see DEP 32.31 .00.34-Gen)
1.D.2.4	Výpočty přístrojů instrumentace (průtokoměry, clony, průtokové stanice, přístroje pro měření rozdílu tlaků, radioaktivní zdroje aj.) / Instrument calculations (flow meters, orifice plates, flow computers, differential pressure instruments, radioactive sources etc.)
1.D.2.5	Výpočty finálních elementů (výpočty rozměrů, hluku, kavitace, těsnosti, doby zdvihu ventilu aj.) / Final element calculations (valve sizing, noise, cavitation, tightness, stroking time etc.)
1.D.2.6	Seznam kabelů instrumentace / Summary of instrumentation cables (cable schedule)
1.D.2.7	Seznam instalačního materiálu / Summary of instrument installation materials
1.D.2.8	Seznam napojovacích bodů na technologii / Summary of instrument process connections
1.D.2.9	Kalkulace výpočtových relé / Computing relay calculations
1.D.2.10	Specifikace časových relé / Timer relay specifications
1.D.2.11	Detaily interní konfigurace přístrojů (např. detaily HART protokolu) / Instrument internal configuration details (e.g. HART protocol details)
1.D.2.12	Specifikace systémů odběru / vrácení, předpřipravení a přenosu vzorku / Analyzer sample take-off I return assembly, preconditioning and transport system specification
1.D.2.13	Výpočet rozměrů vzorkovacího potrubí analyzátoru / Analyzer sample transport system line size calculation
1.D.2.14	Výpočet zpoždění vzorku analyzátoru / Analyzer sample lag time calculation
1.D.2.15	Kritéria výběru a výpočet vzorkovacího čerpadla analyzátoru / Selection of analyzer sample pump and its sizing calculations
1.D.2.16	Výpočet poměru mezi průtokem ve vzorkovacím potrubí a průtokem v normálním technologickém potrubí / Calculations of ratio between analyzer sample line flow and normal process line flow

1.D.2.17	Specifikace systému úpravy vzorku analyzátoru / Analyzer sample conditioning system specification
1.D.2.18	Výpočet podmínek na vstupu a výstupu vzorkovacího systému analyzátoru / Calculations of conditions at inlet and outlet of analyzer sample conditioning systém
1.D.2.19	Výpočet percentuelního množství průtoku analyzátorového vzorku, který je vypouštěn do ovzduší (flérován) nebo do kanalizace Detailní specifikace analyzátoru (včetně všech jeho částí a periferií) / Calculations of percentage of analyzer sample flow, which is vented (flared) or drained
1.D.2.20	Výpočty přídavných zařízení analyzátoru jako např. ohřívače, chladiče, čerpadla, otápění, která jsou použita k tomu, aby bylo dosaženo požadovaných podmínek na vstupu vzorku / Calculation of analyzer's auxiliary equipment such as heaters, coolers, pumps, tracing, which are used to obtain required sample inlet conditions
1.D.2.21	Detailní specifikace analyzátoru (včetně jeho částí a periferií) / Analyzer detailed specification (including all its particulars and peripherals)
1.D.2.22	Výpočty systémů DCS/IPS/PLC/EPS/GDS/CCTV (zatížení, rychlost komunikace, spotřeba energie, tepelné zatížení apod.) / DCS/IPS/PLC/EPS/GDS/CCTV systems calculations (load, communication speed, energy consumption, heating load etc.)
1.D.2.23	Výpočet vstupů a výstupů pro systémy DCS/IPS/PLC/EPS/GDS/CCTV (na řídící procesor) / DCS/IPS/PLC/EPS/GDS/CCTV systems I/O calculations (per control processor)
1.D.2.24	Seznam materiálu (kusovník) pro systémy DCS/IPS/PLC/EPS/GDS/CCTV / DCS/IPS/PLC/EPS/GDS/CCTV systems bill of materials
1.D.2.25	Konfigurace systémů DCS/I PS/PLC/EPS/GDS/CCTV (Detailní návrhová specifikace — FDS) / DCS/I PS/PLC/EPS/GDS/CCTV systems configuration (Detailed Functional Design Specifications)
1.D.2.26	Software systémů DCS/IPS/PLC/EPS/GDS/CCTV na CD-ROM / DCS/IPS/PLC/EPS/GDS/CCTV system software on CD-ROM
1.D.2.27	Systémy DCS/IPS/PLC/EPS/GDS/CCTV — seznam použitých hesel a přístupových kódů / DCS/IPS/PLC/EPS/GDS/CCTV systems — list of all used passwords and access codes
1.D.2.28	Seznam předinstalovaných volných rezerv systémů DCS/I PS/PLC/EPS/GDS/CCTV / List of DCS/IPS/PLC/EPS/GDS/CCTV system pre-wired spares
1.D.2.29	Výpočty spotřeb energií pro přístroje instrumentace / Instrument utility consumption calculations
1.D.2.30	Výpočty pro rozptýlení vyzařovaného tepla / Heat dissipation calculations
1.D.2.31	Obecné výpočty hluku / General noise calculations
1.D.2.32	Štítky přístrojů instrumentace / Instrument nameplates
1.D.3	**Výkresy / Drawings**
1.D.3.1	Schematické diagramy přístrojů instrumentace / Instrumentation schematic diagrams
1.D.3.2	Diagramy procesu řízení (Process Control Diagrams) / Process Control Diagrams
1.D.3.3	Logické diagramy (Process Logic Diagrams) pro sekvenční řízení a zabezpečovací logiku (včetně reléové logiky) / Process Logic (sequence control and safeguarding) Diagrams including relay logic

1.D.3.4	Výkres architektury zapojení nadřazených systémů (DCS, IPS, PLC, EPS, GDS, CCTV, průtokové stanice, systém měření hladin tanků aj.) včetně síťových adres, označení I/O karet, komunikací do souvisejících systémů, popisy a protokoly nestandardně přippjených zařízení apod. / Computer system architectural drawings (DCS, IPS, PLC, EPS, GDS, CCTV, Flow computers, Tank level gauging systems etc.) including net addresses, I/O cards identification, communication to other system, descriptions and protocols of non standard connected equipments and so on.
1.D.3.5	Lokalizace a rozmístění přístrojů polní instrumentace, analyzátorů, požárních a plynových detektorů, CCTV kamer atd. / Location and layout of field instruments, analyzers, fire and gas detectors, CCTV cameras etc in plant.
1.D.3.6	Konstrukční výkresy pro speciální instalace přístrojů instrumentace / Construction drawings for special instrument installations
1.D.3.7	Detaily signálních tras / Instrument signal line details
1.D.3.8	Detaily impulsních vedení / Instrument impulse line details
1.D.3.9	Detaily tras pro vedení vzduchu instrumentace / Instrument air line details
1.D.3.10	Uspořádání a rozmístění kabelových tras instrumentace / Instrument cable trays arrangement and layout
1.D.3.11	Rozmístění kabelů instrumentace v provoze / Layout of instrument cables in plant
1.D.3.12	Rozmístění kabelů instrumentace v místnosti velínu a v pomocných místnostech / Layout of instrument cables in control and auxiliary rooms
1.D.3.13	Rozmístění napájecích kabelů v místnosti velínu a v pomocných místnostech / Layout of instrument electricity supply cables in control and auxiliary rooms
1.D.3.14	Single Line Diagramy pro napájecí kabely přístrojů instrumentace / Single line diagrams for instrument electricity supply
1.D.3.15	Výkresy ukončení kabelů instrumentace (pro oba konce všech kabelů) / Instrument cable termination drawings (for both sides of each cable)
1.D.3.16	Rozmístění místností velínu / Layout of control rooms
1.D.3.17	Rozmístění pomocných místností (včetně analyzátorových domků apod.) / Layout of auxiliary rooms (including analyzer houses etc.)
1.D.3.18	Rozmístění podpěr kabeláže a rozložení jednotlivých kabelů v pomocných místnostech / Layout of cable supports and instrument signal cables in auxiliary rooms
1.D.3.19	Uspořádání a rozvržení v systémových / pomocných kabinetech / Arrangement and layout of system / auxiliary cabinets
1.D.3.20	Uspořádání a rozvržení v ranžírovacích (MDF) kabinetech / Arrangement and layout of main distribution frame (MDF) cabinets
1.D.3.21	Uspořádání a rozvržení kabinetech návazností mezi instrumentací a elektro / Arrangement and layout of instrument I electrical interface cabinets
1.D.3.22	Uspořádání a rozvržení v kabinetech pro rozvod napájení (PDC) / Arrangement and layout of power distribution cabinets (PDC)
1.D.3.23	Uspořádání a rozvržení v kabinetech optických kabelů (FOC) / Arrangement and layout of fibre optic cabinets (FOC)

1.D.3.24	Uspořádání a rozvržení zemnění v místnostech velínů a v pomocných místnostech / Arrangement and layout of grounding in control and auxiliary rooms
1.D.3.25	Rozmístění a konstrukce operátorských stanic / Layout and construction of instrument consoles
1.D.3.26	Uspořádání a rozvržení panelů odstavovacích tlačítek (ESD panely) / Arrangement and layout of Emergency Shut Down (ESD) panel
1.D.3.27	Uspořádání a rozvržení místních panelů a monitorovacích stanic / Arrangement and layout of local control panels and display units
1.D.3.28	Diagramy smyček přístrojů instrumentace / Instrument loop diagrams
1.D.4.	**Databáze**
1.D.4.1	SPI (Smart Plan Instrumentation) v rozsahu dle PPU502 / According to PPU502
1.D.4.2	PRM databáze pro Kralupy / PRM database for Kralupy
1.D.4.3	Seznam použitých IP adres / List of used IP adresses
1.D.4.4	HIST-PI – seznam položek, u kterých je požadován přenos do systému PI ve formátu: COMPOUD:BLOCK.PARAMETER/popis/rozsah/jednotky /HIST-PI list of items, where is required trasfer to PI system in format: COMPOUND:BLOCK.PARAMETER/description/range/units HIST-PI – seznam položek, které se již v systému PI nacházejí a u nichž došlo v rámci projektu ke změně v názvu bloku či compoundy ve formátu: COMPOUD:BLOCK.PARAMETER/popis/rozsah/jednotky/starý název /HIST-PI list of items, which are already present in PI and were changed by project in block or compound name in format: COMPOUND:BLOCK.PARAMETER/description/range/units/old name

2.D.1	**Všeobecně / General**
2.D.1.1	Výchozí revizní zprávy elektrického zařízení — instrumentace, rozdělené po jednotkách / Initial revision reports of electrical equipment — instrumentation, unit by unit
2.D.1.2	Protokoly o shodě dle zákona 22/1 997 Sb. a návazných příslušných nařízení vlády 168, 169, 170, 176 / Protocols of conformity according to Law 22/1 997 Coll and following relevant statutory regulations No. 168, 169,170,176
2.D.1.3	Certifikáty shody AO 210 FTZÚ Radvanice (nebo ekvivalentní v ČR + kopie certifikátu ATEX / Certificate of conformity AO 210 FTZÚ Radvanice (or equivalent in CR) + ATEX certificate copy
2.D.1.4	Protokoly o individuálních zkouškách zařízení MaR a zkouškách regulačních smyček / Protocol for individual tests of instrumentation equipment and loop-checks
2.D.1.5	Protokoly o komplexních zkouškách zařízení MaR / Protocol for precommissioning tests of instrumentation equipment
2.D.1.6	Materiálové atesty / Material certiticates

2.D.1.7	Manuály od výrobců, dodavatelská dokumentace / Manutacturer‘s manuals and documentation
2.D.1.8	Stanoviska ITI / ITI standpoints
2.D.1.9	Protokoly o kalibraci přístrojů MaR u výrobce / Instrumentation equipment calibration protocols carried out by manutacturer
2.D.1.10	Protokoly o kalibraci analyzátorů, včetně certifikátů použitých kalibračních plynů / Analyser‘s calibration protocols including certificates of used calibration gasses
2.D.1.11	Protokoly o zkouškách IPF funkcí před uvedením do provozu / IPF function tests prior to start-up
2.D.1.12	Protokoly o provedených FAT testech (především pro HW a SW systémů DCS, IPS, PLC, EPS, GDS, CCTV, analyzátory atd.) / Factory Acceptance Tests (FAT), especially for HW and SW of DCS, IPS, PLC, EPS, GDS and CCTV systems, analysers etc.)
2.D.1.13	Protokoly o provedených SAT testech (především pro HW a SW systémů DCS, IPS, PLC, EPS, GDS, CCTV, analyzátory atd.) / Site Acceptance Tests (SAT), especially for HW and SW ot DCS, IPS, PLC, EPS, GDS and CCTV systems, analysers etc.)
2.D.1.14	Rozhodnutí o schválení typu měřidla případně měřícího celku (pro stanovená měřidla) Českým metrologickým institut / Determination of type conformity for customer transfer meters or whole facility by Czech metrological institut
2.D.1.15	Dokumentace metrologického zajištění a potvrzení o ověření měřícího obvodu (pro stanovená měřidla) / Metrology related documentation and check-out certificate for custody transfer instrument loops
2.D.1.16	Certifikáty použitých kabelů a potvrzení o vhodnosti do daného prostředí / Certificates of used cables and their applicability for the respective environment
2.D.1.17	Měřící protokoly kabelových tras / Cable lines measurement protocols
2.D.1.18	Protokoly o zaměření zemnících kabelů / Protocols about measurement of earthing cables
2.D.1.19	Protokoly o měření optických kabelů / Protocols about measurement ot fibre optic cables
2.D.1.20	Doklady o provedených kontrolách zařízení před zakrytím nebo záhozem včetně zaměření / Protocols about provided equipment checks prior to their covering
2.D.1.21	Seznam náhradních dílů pro dvouletý provoz / List of spare parts of 2-years operation
2.D.1.22	Seznam materiálu v rámci projektu zakoupeného avšak nevyužitého / Bill of materials purchased but not used during the project
2.D.1.23	Soupis použitých zařízení a praktik, které nejsou v souladu se zákonnými požadavky nebo požadavky ČeR, včetně zdůvodnění a specifikace rizik s tím souvisejících / List of used equipment and practices, which are not in accordance with statutory requirement of CRC standards, including justification and specifitation of risk involved
2.D.1.24	Manuály pro provoz a údržbu (v českém jazyce) / Operating and maintenance manuals (in czech language)

2.D.1.25	Protokoly o zaškolení údržby a obsluhy zařízení MaR / Protocols about training of staff maintaining and operating the instrumentation equipment
2.D.1.26	Osvědčení o jakosti a kompletnosti přístrojů, zařízení a kabeláže instrumentace / Certificate of quality and completeness of instrumentation equipment and cabling
2.D.1.27	Osvědčení o jakosti a kompletnosti montážních prací / Certificate of quality and completeness of installation work
2.D.1.28	Výpisy posledních konfiguračních nastavení přístrojů.
2.D.2	**DCS, IPS a PLC / DCS, IPS and PLC**
2.D.2.1	Seznam použitého software a licenčních kódů / List of used software and licence codes
2.D.2.2	Protokol o legálnosti nabytí softwarových licencí / Protocol about legal acquisition ot software licences
2.D.2.3	Záloha aktuální verze instalovaného software (na CD-ROM) / Back up of latest version of installed software (on CD-ROM)
2.D.2.4	Log-book pro systémy DCS/IPS/PLC/EPS/GDS / DCS/IPS/PLC/EPS/GDS/CCTV systems logbook
2.D.2.5	Výpis z diagnostiky systémů DCS/IPS/PLC/EPS/GDS/CCTV těsně před ukončením projektu / Print out of DCS/IPS/PLC/EPS, GDS/CCTV systems diagnosis just before project completion
2.D.2.6	Uživatelská příručka / User‘s guide
2.D.2.7	Protokoly o zaškolení údržby a obsluhy zařízení MaR / Protocols about training ot statf maintaining and operating the instrumentation equipment
2.D.2.8	Osvědčení o jakosti a kompletnosti přístrojů, zařízení a kabeláže instrumentace / Certificate of quality and completeness of instrumentation equipment and cabling
2.D.2.9	Osvědčení o jakosti a kompletnosti montážních prací / Certificate of quality and completeness of installation work
2.D.3	**Elektronická požární signalizace vč. bezpečnstních a výstražných zařízení / Fire alarm system**
2.D.3.1	Protokoly o vytipování požární signalizace / Identification protocols for fire detectors
2.D.3.2	Prohlášení o shodě na systém EPS
2.D.3.3	Certifikáty - doklady o uvedení na trh v ČR, popř. posudky specializovaných pracovišť (např. dokumentace o provedeném posouzení shody nebo typovém schválení systému)
2.D.3.4	Protokol o měření kabelů
2.D.3.5	Protokol o vyzkoušení vazby na nadřazený systém vč. Zařízení dálkového přenosu
2.D.3.6	Písemné potrvrzení osoby oprávněné k projektování vyhrazeného PBZ /§10,odst.2 vyhlášky o pož. prevenci/
2.D.3.7	Písemné pověření k provádění montáže od výrobce zařízení
2.D.3.8	Písemné potvrzení osoby provádějící montáž PBZ/§6,§10 odst.2 vyhlášky o popžární prevenci/
2.D.3.9	Doklad o kontrole provozuschopnosti zařízení/§ 7,odst.8 a §10,odst.2 vyhlášky o požární prevenci/ Funkční zkouška

2.D.3.10	Protokol o zaškolení obsluhy
2.D.3.11	Protokol o předání , převzetí a uvedení do trvalého provozu/vč.funkční zkoušky EPS, včetně ovládaných zařízení/
2.D.3.12	Záznam do knihy EPS o uvedení do trvalého provozu, popř. provozní kniha zařízení EPS
2.D.3.13	Doplnění adresace a blokových schémat, průvodní dokumentace výrobce, včetně popisu a funkce systému
2.D.3.14	Návody k obsluze / Operating instructions
2.D.3.15	Záruční list / Warranty certificate
2.D.3.16	Výchozí revizní zpráva / Initial inspection report
2.D.3.17	Záznam o ověření funkce náhradního zdroje při výpadku základního zdroje / Record of the operability test of the back-up power supply (in case of the primary power supply source‘s failure)
2.D.4	**Zařízení pro detekci hořlavých plynů a par vč. bezpečnostních a výstražných zařízení / Gas detection system**
2.D.4.1	Protokoly o vytipování plynové detekce / Identification protocols gas detectors
2.D.4.2	Doplnění adresace a blokových schémat, průvodní dokumentace výrobce, včetně popisu a funkce systému
2.D.4.3	Prohlášení o shodě
2.D.4.4	Certifikáty - doklady o uvedení na trh v ČR, popř. posudky specializovaných pracovišť (např. dokumentace o provedeném posouzení shody nebo typovém schválení systému)
2.D.4.5	Protokol o měření kabelů
2.D.4.6	Protokol o vyzkoušení obvodů a vazby na nadřzený systém vč. Zařízení dálkového přenosu
2.D.4.7	Protokol o vyzkoušení náhradního zdroje
2.D.4.8	Protokol o výchozí revizi elektro
2.D.4.9	Manuál výrobce zařízení/ obsluha,oprava,údržba zařízení/
2.D.4.10	Písemné potvrzení osoby oprávněné k projektování vyhrazeného PBZ/§10,odst. 2 vyhlášky o pož. prevenci/
2.D.4.11	Písemné pověření k provádění montáže od výrobce zařízení
2.D.4.12	Písemné potvrzení osoby provádějící montáž PBZ /§10,odst.2 vyhlášky o pož. prevenci/ doklad o montáži 246/2001
2.D.4.13	Doklady o dokončené montáži podle ověřené proj. a technické dokumentace včetně dokladu o kompletnosti systému a doklady o splnění předepsaných nebo projektovanýchvlastností a parametrů systému.
2.D.4.14	Doklad o kontrole provozuschopnosti zařízení/§7,odst.8 a §10odst.2 vyhlášky o požární prevenci/
2.D.4.15	Protokoly o kalibraci plynových detektorů, včetně certifikátů použitých kalibračních plynů / Gas detector‘s calibration protocols including certificates of used calibration gasses
2.D.4.16	Záruční list GDS / GDS system certificate of warranty
2.D.5	**Software**

2.D.5.1	Seznam poskytnutých licencí, včetně detailů o jejich rozsahu, době platnosti apod. / List of used licenses including details concerning scope, time validity and so on
2.D.5.2	Protokol o legálnosti nabytí softwarových licencí / Protocol about legal acquisition of software licence
2.D.5.3	Instalační CD a media ke všemu dodanému SW a SW nástrojům / Installation CD and media to all delivered SW and SW tools
2.D.5.4	Záloha aktuální verze instalovaného SW (na CD-ROM a výtisk včetně komentářů labelů apod.) / Back-up of latest version of installed software (on CD-ROM and Hard copy including all comments and labels)
2.D.5.5	As-built zálohy veškerého instalovaného SW na médiích (provozního, řídícího, aplikací, vizualizací apod.) tak, aby bylo možné celý systém ze zálohy obnovit / As-built of all installed SW on media (operation, control aplication, visualisation and so on) to be able restore system from back-up
2.D.5.6	Výtisk obrazovek / Print screen
2.D.5.7	Systémy DCS/IPS/PLC/EPS/GDS/CCTV – seznam použitých hesel a přístupových kódů, práv a prostředí / DCS/IPS/PLC/EPS/GDS/CCTV system – list of all used passwords and Access codes, Access rights, enviroments
2.D.5.8	Dokumentace použitých SW nástrojů, řídící dB, historie, reportů, procesních displejů, oper. klávesnic, anunciátorů apod. / Documentation used SW tools, control dB, history, reports, process display, operator keyboards, anunciators and so on.