

Unipetrol RPA, s.r.o. Petrochemical Maintenance Section	PIPELINE DISTRIBUTION NETWORKS. Documentation, inspections and takeover	N 11 986

The standard is binding for all units in UNIPETROL RPA, s.r.o. which have pipeline distribution networks in use or carry out (provide) their maintenance, repair, construction, or design new pipeline distribution networks, or which negotiate business obligation relationships for purchase of pipeline distribution networks.

Furthermore, this standard is binding for all UNIPETROL RPA, s.r.o. responsible for recording, inspection, testing and takeover of pipeline distribution networks and for external organizations (contractors) performing maintenance and capital construction for UNIPETROL RPA, s.r.o. The standard does not apply to subsidiaries of UNIPETROL RPA, s.r.o. Furthermore, it does not apply to the Litvínov and Kralupy Refineries either.

The company departments are obliged to acquaint all the external organizations providing for them activities related to pipeline distribution networks (maintenance, capital construction) with the standard.

The standard applies to all pipeline distribution networks classified in group 4 according to N 11 985.

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1. General stipulations

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1.1 Terms, definitions and abbreviations

User	- The manager of the plant or department to whom the operator entrusts tangible fixed assets. He/she is responsible for its efficient use and completeness.
Care taker	- A designated employee who is responsible for the technical condition of various groups of fixed tangible assets, including maintenance and repairs
User	- The unit manager or plant manager designated with overall responsibility for fixed tangible assets
Company	- UNIPETROL RPA, s.r.o.
FTA	- Fixed tangible assets
FAD	- UNIPETROL SERVICES, s.r.o., Financial Accounting Department
FMD	- UNIPETROL SERVICES, s.r.o., Financial Management Department
PMI	- Positive material identification; analytical method carried out by mobile emission spectrometers intended for verification of the standard prescribed chemical composition of metal materials
Inspector	- Designated employee who is responsible for the technical integrity of the equipment in the assigned area (according to the asset register).
PT	- Production team

1.2 pipeline distribution network means not only the pipeline itself, including valves, compensations, orifice gauges, insulation, but also accessories such as heating pipeline, condensate traps, walkways for valves or measurement and additional construction (lining of U-compensations and storey supports) for fixing and operation of the pipeline distribution network. Condensate collectors, separators and manifolds are part of the pipeline only if they are not separate pressure vessels according to Section 2 (b) of Decree. no. 18/1979 Coll.

1.3 The standard applies to all individual pipelines classified in group 4 according to N 11 985 standard.

1.4 The standard does not apply to:

1.4.1 Pipelines or their parts with nominal diameters less than DN 25 up to and including PN 64 and pipelines or their parts with PN 100 and above with nominal diameters less than DN 10;

1.4.2 High pressure pipelines with a working overpressure of 10 MPa and above with a DN greater than DN 10, the principles given in section 2.3 of this standard shall apply;

1.4.3. Distribution pipeline distribution networks conveying solids through air (granules, bulk materials, etc.), which lead to non-pressurized (vented) silos and reservoirs and through which the environmentally safe, non-flammable and non-explosive substances are transported. The decision to classify the pipeline distribution system into this category is decided by the relevant maintenance department manager in cooperation with the plant manager;

1.4.4 Underground pipeline distribution networks.

1.5 The validity of the standard for individual types of pipeline distribution networks is explained in more detail in the individual paragraphs.

1.6 Investment accounting department - FAD maintains lists of TFA that show which divisions are users and care takers of individual TFA. These lists are sent to users and care takers once every two years.

1.7 The boundary on the pipeline distribution network between individual users is set according to the principle that the supply division is the user of the pipeline distribution network up to the construction of the customer, while the exact boundary is set by a written agreement between the supplier and the customer. The demarcation of the boundary is determined in the pipeline distribution network Handling Rules, which are prepared by the plant manager or an employee authorized by the manager under Regulation 845.

1.7.1 For maintenance purposes, the boundary between supplier and customer coincides with the boundary between individual users. The limits of energy pipelines are defined by Regulation 348.

1.7.2 If the pipeline distribution system is used and maintained by multiple users, the boundary between different users is also established by a written agreement between these users.

1.7.3 The boundary for the care taker is given by the range of the inventory number according to the relevant pipeline distribution network card in accordance with the records of the investment accounting department and does not always have to correspond to the operating limits given by the pipeline distribution network Handling Rules.

2. Division, records and marking of the pipeline distribution networks

2.1 Basic division

Pipeline distribution networks covered by this standard are divided into 4 groups, namely:

- **group I:** selected most important systems from equipment of group 4 according to N 11 985
- **group II:** selected important pipeline distribution networks from equipment of group 4 according to N 11 985
- **group III:** other minor pipeline distribution networks from equipment of group 4 according to N 11 985
- **group IV:** other unimportant pipeline distribution network from equipment of group 4 according to N 11 985

The pipeline distribution networks of groups I and II include pipeline distribution networks with hazardous liquids (gases, gases dissolved under pressure, vapours, liquids, and their mixtures) and pipelines, which in the event of a failure, endanger people, property and environment. Hazardous liquids are classified in Liquid Group 1 according to CEN/TR

13480-7: 2002 (ČSN 13 0020) and are defined as explosive, extremely flammable, highly flammable, flammable (when the maximum allowable temperature is above the ignition point), very toxic, toxic and oxidizing.

The pipeline distribution networks of groups I and II also include:

- the pipeline distribution networks classified as gas equipment in COSO (Czech Occupational Safety Office) and CMO (Czech Mining Office) Decree no. 21/1979 Coll. and N 11 004 standard
- the pipelines systems of steam, water and condensates with a temperature of 110 °C and higher *and with an operating pressure of 4.5 MPa and higher.*

The pipeline distribution networks of group III and IV include the pipeline distribution networks with products and parameters that do not belong to groups I and II.

The division of the pipeline distribution networks into pipelines is done by relevant employees of the production team, inspection and maintenance departments.

2.2 Records

The pipeline distribution networks are uniquely identified by the technical location code in PM SAP and the inventory number of tangible fixed assets.

Under one inventory number of tangible fixed assets, the pipeline distribution network or its section may be kept only for the type of the product specified by the technical regulation, the operating instruction or the project documentation.

For newly recorded pipeline distribution, which are repeated (they are part of equipment assembled into lines, series), the records will be kept for each pipeline distribution network with a separate inventory number.

2.2.1 For all pipeline distribution networks of groups I to IV, uniform “pipeline distribution network Cards” shall be prepared and maintained by the relevant care takers in cooperation with users and inspectors. The cards are processed in the course of investment construction according to Article 6.

2.2.2 For better clarity, we recommended preparing the pre-prints of the cards in three colours, especially in the context of new investment projects:

- red colour : for group I
- blue colour : for group II
- white colour : for group III and IV

The pipeline distribution networks Cards must be properly maintained and archived in written and electronic form (digitization – scan, etc.). – it applies to newly transferred investment projects

The cards are part of passports of the respective pipeline distribution networks. The care takers shall record inspections and repairs of the pipeline distribution networks in the cards or passports.

2.2.3 The "Pipeline distribution network cards" boxes for cycles of external inspections, NDT inspections and leak pressure tests shall be completed as determined by the relevant care taker and inspector (see Art.-4.3:4.5:4.6).

2.2.4 Records in PM SAP

2.2.4.1 The records of pipeline distribution networks and their sections are ensured in PM SAP by an information record of the technical location, which contains the following basic descriptive data:

- technical location code
- name
- classification class
- inventory number of tangible fixed assets
- designation of the building where the pipeline distribution network is located
- group of the pipeline distribution network according to point 2.1
- the cost centre of the respective plant
- care taker code
- inspector code

The pipeline distribution network is recorded in PM SAP on the basis of a documentable request (written or e-mail) from the relevant user or care taker and it must contain the above information.

Changes in the pipeline distribution network information record in PM SAP are possible only on the basis of a documentable request:

- from the respective operator – in the event of disposal
- from the relevant care taker and inspector – in case of modification of inspection plans,

The documentary requirement shall include the following information:

- code of the technical location of the pipeline distribution network
- name of the pipeline distribution network
- date of the requested change (scrapping)
- new values of changed data

Requirements are delivered to the maintenance support section, which manages the pipeline distribution network database in PM SAP and provides modification of their information records.

All employees involved (user, care taker and inspector) must be informed of the changes retrospectively by e-mail.

2.2.4.2 The records in PM SAP include plans of inspection activities for the pipeline distribution networks.

These plans are administered by the Reliability and Documentation Department.

This activity includes:

- implementation (deactivation) of the plan of inspection activities
- interchanging of plans

The establishment of a plan is only possible on the basis of a documentable request by the relevant care taker , or by an inspector according to the set responsibilities, which must include the following information:

- code of the technical location of the pipeline distribution network
- name
- name of the inspection activity (strategy)
- period of the inspection activity
- date of the last performance of the inspection activity
- date of the requested change (creation, deactivation)

Requests are delivered to the maintenance support section.

The user, care taker and inspector shall be informed retrospectively of any changes in the control activity plans by e-mail.

2.2.4.3 The records and inspection of pipeline distribution networks are ensured by individual care takers and inspectors in relation to the assigned competencies using the database in PM SAP. The database of the monitored pipeline distribution networks is updated on the basis of original records of performed inspections of pipelines, disposal records, new pipeline distribution networks included in the file and other changes of the basic data of pipeline inventory numbers (change of care taker, change of account, change of the building and cycle of the inspection).

2.2.4.4 Individual care takers and inspectors shall periodically inspect the updated assemblies of the pipeline distribution networks in PM SAP module within their competences in order to meet the specified deadlines for all types of pipeline inspections.

2.2.4.5 Comprehensive records and inspection of the pipeline distribution network is provided in close cooperation with the Investment Accounting Department - FAD, which transfers the information on the inclusion of new pipeline distribution networks, disposals and other changes in basic pipeline distribution network data (change of care taker, user, building, name) to the participating departments (operator, care taker and inspector).

2.3 Marking of the pipeline distribution networks and their components

2.3.1 For the pipeline distribution networks with a working overpressure of 10 MPa to 32,5 MPa with flanged connections according to N 16, N 18, all high-pressure components made of 15 (N) material and the components made of 12 (S) and 17 material shall be marked:

- all high-pressure shut-off and check valves
- connecting arcs of DN 70 coolers
- extended elbows with foot
- thermometer wells
- all safety valves
- cooler splitters
- special fittings (forged and welded) as specified by the care taker
- high pressure cooler tubes

2.3.1.1 The marking of these components shall be provided by the care taker.

2.3.1.2 After the registration number, each high-pressure component must be dimensionally checked. A written report on the results of the inspection containing the information in accordance with N 16, N 18 will be prepared and forwarded to the care taker.

2.3.1.3 In the case of newly marked high-pressure components with a registration number, the authorized employee of the care taker shall issue a registration card in which he/she records the result of the inspection report, date and installation location. The exception is the DN 6 basic high-pressure components, in which the installation location of the pipeline distribution networks is recorded by the section, in which they are installed (e.g. valve group of chamber 7). At the next inspection, the authorized employee shall record the operating hours accumulated. The register of high-pressure component registration cards and the book of assigned registration numbers for individual groups of high-pressure components is filed at the respective care taker.

2.3.1.4 High-pressure parts made of 15 (N) material of German origin (from 1939 - 1945) are marked with registration numbers in the same way as registration cards. The numbering system and registration cards have been adopted.

High-pressure parts made of 15 (N) material (made after 1945) are marked with numbers with SZ index and the registration cards are based on them.

High-pressure parts at the ammonia plant will be numbered with AS designation before each registration number (e.g. AS 55451) to distinguish from the same numerical series of Česká rafinérská, a.s.

2.3.1.5 The measurement of high-pressure components of 15 (N) material and specifically designated 12 (S) components shall be carried out during repairs or, as the case may be, for components in groups I and II, at scheduled inspections and revisions. The range of high-pressure components to be measured is determined by the repair schedule. A written report (print no. 066/007-36/65-3771), the results of which together with the date and installation location are entered in the registration cards.

2.3.1.6 Prior to dismantling, the high pressure components not already registered in the existing equipment shall be described by their location number according to the relevant drawing documentation. Immediately after disassembly, the registration number is stamped on the component and the registration card is issued. The location of the existing installation shall be recorded in the registration card. After the dimensional inspection of the component, the result of the inspection report is recorded in the registration card.

If the component is accepted as compliant, the date and installation location are recorded in the card.

The extent of the dismantled components during repairs is given by the repair schedule.

2.3.1.7 The selected high-pressure components which are maintained by the care taker and which are not built-in shall be marked with a registration number when they are prepared by the care taker for installation. After marking, the component is submitted for inspection. Other handling is similar as described in article 2.3.1.2 and 2.3.1.3, or in Article 2.3.1.6 of this standard. Similarly, spare components prepared in case of quick replacement must be marked.

2.3.1.8 New high-pressure components taken from supply warehouses shall be marked with a registration number, and a registration card shall be issued for them, in which the date and location of installation shall be recorded. The competent care taker shall, according to the numbers stamped on the components by the manufacturer, request attestations from the technical inspection department (quality control department) of the supplier.

2.3.1.9 Equipment after construction will be handed over with unrecorded high-pressure components. For the high-pressure components, the implementing organization shall only pass the attestations, which must indicate the test designation, the heat number, the registration number, etc. When dismantling any component, for whatever reason, the procedure shall be the same as when dismantling selected high-pressure components from existing equipment, as specified in Article 2.3.1.6.

2.3.2 Groups of high-pressure component numbers for individual care takers of the manufacturing equipment:

- GCAD 0 to 9 999 ^{x)}
- Ammonia production plant AS 10 000 to 69 999

^{x)} At GCAD (gas compression and distribution), numbering according to the current capacity in the range of this group is required and the numbering of the valves increases from 2 000 to 9 999.

In the other plants, numbering of the individual components, always starts with the initial number of the group designated to the respective plant. Existing valve numbers are recorded until scrapping. Other high-pressure components of the designated groups are numbered with registration numbers regardless of the inside diameter continuously.

3. Passports and drawing documentation

3.1 Passports

The passports of the pipeline distribution networks shall be maintained by the care taker or employees subordinate to him/her.

The passports shall be kept in a written or electronic form.

3.1.1 The passports of pipeline group I-IV

In addition to the documents listed in the passport content according to N 11 985 standard - "Standard for keeping passports of manufacturing equipment", the following mandatory passport annexes are laid down for pipeline distribution networks of groups I to IV:

- card of the pipeline distribution network
- repair reports (quality component)
- inspection reports
- wall thickness inspection reports
- accident reports
- the passport includes partial drawings identifying the extent of repairs
- complete drawing documentation is within AS BUILT documentation archived and managed in DMS SAP in accordance with S 350

- technological procedures or records on surface protection (if processed), including the kind, type and thickness of the coating, the date of surface protection made and the warranty provided.

The extent and number of other annexes shall be determined by the care taker and the inspector, taking into account the type of the pipeline distribution network.

3.1.5 Documentation of new PT components

When replacing the selected high-pressure components manufactured according to N 16, N 18 standard, it is proceeded according to Art. 2.3.1.6 of this standard.

3.2. Drawing documentation

Drawing documentation prescribed by general regulations and ČSN valid at the time of manufacturing of the equipment must be filed for all pipeline distribution networks. The management of this documentation is determined by Regulation 350.

4. Checks, inspections, revisions and tests

In order to ensure safe and reliable operation of the pipeline distribution networks, their condition must be regularly checked. For this purpose, the following checks, inspections, revisions and tests shall be carried out.

Based on the inspections and measurements carried out, the care taker plans to replace the pipeline distribution network in advance on the basis of the inspections made.

Overview of the specified checks, inspections, revisions and tests:

- Checks made by the user – chap. 4.1
- Operational revision – chap. 4.2
- External checks made by the maintenance technicians – chap. 4.3.1.
- “B” checks – external checks made by the care taker – chap. 4.3.2 – records in PM SAP system
- Internal local checks – chap. 4.4
- Inspection of the wall thickness of the pipeline components – chap. 4.5 – records in PM SAP system
- Periodic leak pressure tests – chap. 4.6.1 – records in PM SAP system
- Pressure tests after repairs – chap. 4.6.2
- Pressure leak tests after completed repairs – chap. 4.6.3

4.1 Inspections made by the user

4.1.1 Equipment inspection is to assess whether the condition of the operated equipment complies with the requirements of work safety and safety of technical equipment and fire protection requirements.

4.1.2 Inspections are carried out by an authorized employee of the user who demonstrably knows the operational regulations, safety and emergency regulations for the operation of the inspected equipment, related safety regulations, fire regulations, alarm directives, emergency plan of the respective plant (or emergency plan of the company) and who is trained to operate the equipment.

4.1.3 Inspections shall be carried out on the pipeline distribution networks of all groups at least every three months when the equipment is in operation.

4.1.4 pipeline distribution networks of group I installed on the pipeline bridges, except for those which are technologically and territorially part of the respective plant, shall be inspected once a month.

4.1.5 During these inspections the following is visually checked:

- tightness of the pipeline distribution network, surface of pipes (state of surface protection), bends, branches, transitions and flange connections (conductive connection)
- fixing of the pipeline distribution network (supports, hangers)
- vibrations, shocks and throughput of the pipeline distribution network
- function of heating and drainage systems
- insulation integrity
- removal of flammable objects
- marking of pipeline distribution networks according to ČSN 13 0072, N 13 700 and marking of closing valves

4.1.6 In addition to the inspections, the operator shall test the valve function by turning the spindle by a certain number of revolutions, and regularly clean and preserve the valve spindles. The procedure and deadlines are determined by the plant manager or they are included in the operating instructions.

4.1.7 The authorized employee shall record the inspections in the operation log, which shall include:

- name and surname of the employee who carried out the inspection
- date of inspection
- scope of inspection with unambiguous marking of the pipeline according to operating practices
- identified defects
- signature of the inspector

The inspection documentation includes a list of pipeline distribution networks.

4.1.8 Elimination of the defects shall be ensured by an authorized employee, either alone or in cooperation with the care taker; or the employee shall inform his/her supervisor about them. Troubleshooting is also recorded in the operation log.

4.1.9 Decree of COSO no. 85/1978 Coll., Section 3 shall stipulate the inspections. The authorized employee of the user, who must hold a certificate of professional competence to operate gas equipment based on the inspection by an inspection technician, shall carry out the inspections. The provisions of Art. 4.4.1, 4.1.2, 4.1.5, 4.1.7 and 4.1.8 shall apply to the inspections of the gas equipment. Inspections of gas equipment (pipeline distribution networks) shall be carried out at least once a year during operation of the equipment.

4.2 Operation revisions

They are carried out by an inspection technician for gas pipeline distribution networks according to N 11 004 standard.

The gas equipment revision report shall be received by the user, the care taker and the inspector.

4.3 External inspections made by the care taker

4.3.1 External inspections of the maintenance technician or maintenance technicians in cooperation with an external company (applies to separation of bridges). They are carried out on all pipeline distribution networks of groups I to IV.

4.3.1.1 During inspections it is visually checked:

- external appearance, general condition of pipeline distribution network, insulation and surface protection
- tightness of the pipeline distribution network, flange joints, valve seals
- fixing of the pipeline distribution network (supports, hangers), deformation of compensators
- conductive connection of flange connections

4.3.1.2 The check cycle shall not exceed 1 month. For pipeline distribution networks important for production or those with more frequent defects, the inspection cycle may be reasonably shortened by the care taker. The content and scope of checks should also be adapted to the importance of the pipeline distribution network.

4.3.1.3 The checks are carried out within regular walk through inspections of individual sections by responsible maintenance technicians or maintenance technicians in cooperation with an external company (**applies to separation of bridges**). The elimination of possible findings with an impact on the safe operation of the pipeline distribution network resulting from checks is organized by the maintenance technician by issuing separate reports and subsequent orders included in the planning process. The scope of repair is always consulted and approved by the competent inspector. The date of implementation is decided by the respective production team (PT) planner according to the assigned priority.

4.3.1.4 In case of serious findings, eventually findings with a large volume of activities and assumption of a significant financial burden, the authorized employee shall immediately inform his/her supervisor about the findings.

4.3.2 External checks by the care taker or an employee authorized by him/her - "B" checks

They are carried out on the pipeline distribution networks of all groups. These checks serve primarily as a basis for planning of repairs, their purpose is to visualize the current mechanical condition of the pipeline distribution network, including accessories.

4.3.2.1 The paint inspection according to N 10 051 are carried out by the care taker directly or ordered by the dept. of Material and corrosion testing facility.

4.3.2.2 The inspection of the wall thickness of the pipeline components is not part of the check. However, the employee performing the check shall assess the results of the wall

thickness measurement in the past cycle and take a stand to this in the report for the pipeline distribution networks of groups I and II and for other pipeline distribution networks where measurement has been decided.

4.3.2.3 The employee performing the check shall also assess external corrosion attack and possible weakening at inaccessible pipeline distribution network locations (at supports, hinges) depending on corrosion aggressiveness of the environment, surface temperature and how the pipeline distribution network is protected. The inspection also includes a visual inspection of the tightness of the pipeline distribution network, flange joints, valve seals.

4.3.2.4 Where appropriate, the care taker or his/her authorized employee performing the check shall also invite employees of other specialized departments as advisory bodies.

4.3.2.5 The check cycle shall be determined by the care taker in collaboration with the inspector and recorded in the pipeline distribution network card. The inspection cycle for pipeline distribution networks of groups I and II shall not be longer than 3 years, for pipeline distribution networks of groups III and IV it shall not be longer than 5 years.

4.3.2.6 The care taker shall record the result of the inspection in the prescribed report, a copy of the report shall be received by the relevant representative of PT and the designated inspector. Based on the report, the care taker shall arrange the inspection in the PM SAP system.

4.3.2.7 Inspection results are used by the inspector to plan the scope of inspections as part of further inspections as per Articles 4.4, 4.5. and 4.6 including the determination of the range of wall thickness inspections of the pipeline distribution network under consideration.

4.3.2.8 Should any uncertainty about the condition of the pipeline distribution network arise based on findings during their operation pursuant to Article 4.3, these activities shall be supplemented by NDT tests (UT, RT, etc.).

4.4 Internal local checks

They are carried out on the pipeline distribution networks of groups I to IV. The internal local inspection is carried out when replacing valves and pipeline parts.

4.4.1 If during the visual inspection the maintenance technician finds that the selected parts have reached the limit wear, he/she shall inform the relevant inspector and they jointly determine the extent of the inspections of other components taking into account the current state of wear, or the inspection of the whole technological node. The components, where wear has reached a degree that reuse does not guarantee safe operation, shall be replaced. The repair itself shall be carried out in accordance with Article 4.3.1.3.

4.5 Checking the wall thickness of pipelines and pipeline components

The wall thickness is checked especially for the pipeline distribution networks of groups I and II. The inspection of the pipeline distribution networks classified in Groups III and IV shall be decided by the inspector in cooperation with the care taker, who shall ensure the actual course of activities based on the inspector's requirements.

4.5.1 The inspections shall be carried out on permanently selected components which are expected to have maximum wear. The choice of the measuring range, i.e. the number of measured points or the proportion of the area checked, is determined by the corrosion aggressiveness and the expected forms of corrosion. When determining the measuring points, it is necessary to evaluate separately the individual pipeline branches for corrosion aggressiveness and determine the places where maximum attack can be expected.

Factors that must be considered include:

- a) whether the equipment is operating in the gas or liquid phase
- b) medium character
- c) location with maximum temperature
- d) location with maximum pressure
- e) location with maximum flow rate (possibilities of material erosion)
- f) locations with non-laminar flow
- g) locations where medium retention occurs
- h) locations, where medium condensation occurs (sludge, bottom parts, deflection, uninsulated necks)
- i) surrounding of paint coats, in places of possible overpainting
- j) locations, where vibrations occur, rapid temperature changes
- k) influence of external effects

Initial determination of measuring points cannot be considered final, but it can be optimized by evaluating the data obtained.

4.5.2 In order to determine the inspection cycle, the inspector and the care taker may use the cooperation with the manager of dept. of Material and corrosion testing facilities. The measurement frequency is determined according to the corrosion aggressiveness, the expected forms of corrosion, the observed corrosion losses and the previous experience with the pipeline distribution network. The maximum interval between inspections and between takeover of the pipeline after construction and the first inspection is 5 years. The inspector shall record the result of the inspection in the prescribed report; a copy of the report shall be received by the relevant representative of PT and the designated care taker. Based on the report, the inspector shall arrange the inspection in PM SAP system.

When the pipeline is included in the corrosion loop system, the inspection cycle is firmly determined based on the calculation of the medium criticality. This calculation takes into account the technical, safety and economic parameters of the pipeline. Based on the calculation, the pipeline distribution networks are classified in the inspection intervals of ½ year, 1 year, 2 years, 4 years and 6 years. The interval is set by the dept. of Material and corrosion testing facilities. The interval can only be changed based on a new criticality of the medium. Corrosion engineers add data to the corrosion loop application software.

4.5.3 Measurement of the wall thickness of pipeline and pipeline components is carried out by a specialized department (e.g. dept. of Defectoscopy and diagnostics or maintenance departments, etc.). The submitter of the measurement requirement shall submit the specification of the requirement with specification of the technical location, name of the system, DN, PN, construction number and number of inspected components, temperature, operating medium, material of pipeline distribution network.

4.5.4 The expert department performing the measurement shall determine the measurement method. If the measurement is performed by the ultrasonic method, the care taker will ensure that the measured points of the pipeline components are cleaned up to the metal surface. In the event of a repeat measurement based on the inspector's assignment in cooperation with the maintenance technician, the implementer –permanently marks the measured point according to the UNI RPA methodology. The recommended size and shape of the designated point shall be determined by the NDT specialist. The exact positioning of the measurement point on the component is the responsibility of the inspector in cooperation with the maintenance technician. It is important to ensure that more points along the circumference are cleaned and measured in the measured pipeline cross-section to make it easier to assess the condition of the pipeline.

4.5.5 The expert department that carried out the measurement shall prepare a report, including the evaluation, on the outcome of the inspection, and it shall hand over to the inspector and the care taker and it shall file a copy in its documents. The report shall specify the measured wall thickness for each measured point, indicate the minimum wall thickness based on the company's standard and nomograms or the production documentation, whether or not the inspected component complies with other operations.

4.5.6 In the event of extraordinary cases of wall thickness reduction, the measurement department shall immediately inform the responsible inspector, user, care taker and supervising departments.

Then it is proceed according to Regulation S 846 – solution of the results of the defectoscopy inspections.

4.5.7 At the request of the inspector, the care taker shall arrange the job order for repair order, including the relevant spare parts, and submit it to the production team for approval and planning the entire event.

4.6 Periodic leak pressure tests, pressure tests after repairs

They are carried out on the pipeline distribution networks of all groups. The pressure test procedure is determined by N 11 062 and N 11 063.

4.6.1 Periodic pressure leak tests

4.6.1.1 The pressure leak test cycle shall be determined by the inspector in cooperation with the care taker and the production team representative, taking into account the current state of wear in the pipeline distribution network. For the pipeline distribution networks of groups I and II the cycle is 5 years, this test is supplemented with NDT measurements not older than 2 years.- The scope of NDT inspections is determined by the inspector, the care taker ensures his/her own implementation in cooperation with the NDT department or an external company.

4.6.1.2 The pressure test may be carried out with water or other suitable liquid (inert gas, working medium). The value of the test pressure shall be determined jointly by the relevant employees of the production team, inspection and maintenance department, and should not be less than 0.9 times the maximum of operating pressure, and in exceptional cases the

pressure may be lower. The test pressure shall be kept in the pipeline distribution network for the duration of the leak test.

4.6.1.3 The inspector/inspecting technician shall periodically evaluate the result of the pressure leak test based on the procedure specified by him/her.

4.6.1.4 If a pressure drop is found on the check pressure gauge or a leak is found, the test shall be unsatisfactory and shall be repeated to ensure that the pipeline distribution network is inspected. During the repeated test, the suspected areas must be insulated in the insulated pipelines.

4.6.1.5 The user shall cooperate with the inspector and care taker to carry out the periodic pressure leak test, and together with the inspector they are responsible for meeting the deadlines.

4.6.1.6 The inspector shall record the pressure leak test result in the prescribed report; a copy of the report shall be received by the relevant representative of PT and the designated care taker. Based on the report, the inspector shall arrange the inspection in PM SAP system.

4.6.2 Pressure strength test after repairs

4.6.2.1 When repairing welding-connected pipelines, a pressure strength test of the pipeline or its part is necessary. In exceptional cases, this test can be replaced by 100% NDT inspection of welds (radiography, ultrasound and other tests, see product standard) and pressure leak test, this form of test must be agreed in advance. The test pressure for the pressure leak test shall be greater than or equal to the operating pressure, which generally satisfies 0.9 times of the maximum operating pressure.

The pressure strength and leak test after repairs can be carried out in a different way, in agreement with a specialized department, e.g. by a special procedure combining calculation methods with material tests and diagnostic methods (an example is a steam pipeline on EJ).

4.6.2.2 The pipeline distribution network which has been out of operation for more than 6 months or has not been put into operation for more than 6 months after the test must not be put into operation without the approval of the designated committee with the participation of Production Team, Inspection Department and Maintenance Department (the committee is called by the production team).

In conclusion, the committee may require to carry out:

- pressure leak tests;
- activities according to Articles 4.1, 4.3.2 and 4.5 of this standard;
- for pipelines integrated into a dedicated gas equipment, carry out an extraordinary “Operational revision of the DGE (dedicated gas equipment) pipeline distribution network” within six months while the pipeline distribution network is in operation;
- pressure strength tests for industrial distribution (defined by TPG 70301 - e.g. natural gas).

Responsibility for implementation is the responsibility of the user who ensures the activity in cooperation with the inspector and care taker.

This provision does not apply to pipeline distribution networks, the construction of which is provided by the relevant specialized department of the investment section of the company, within the investments.

4.6.2.3 Pressure strength tests for the pipeline distribution networks that are categorized by Decree no. 21/1979 Coll. as dedicated gas equipment shall be taken over by the gas equipment inspecting technician of the contractor. After the test has been successfully completed, he/she shall issue a report to the user, inspector and care taker, who shall ensure that the report is filed in the pipeline card or attached to the electronic pipeline card.

4.6.2.4 Pressure strength tests for other pipelines shall be carried out by a professionally qualified person who shall prepare and sign a test report and passes it to the user, inspector and care taker, who shall ensure that the report is included in the pipeline distribution network card or attached to the electronic pipeline card.

4.6.2.5 The user shall cooperate with the inspector, contractor and care taker to carry out the pressure strength tests after repair.

4.6.3 Pressure leak tests are carried out to verify the tightness of pipeline distribution networks after completed repairs where individual parts of the system have been dismantled and in cases where leaks in the demountable joints cannot be excluded after long-term operation (e.g. frequent and rapid changes in medium temperature).

4.6.3.1 The extent of the pressure leak test after repairs is determined and ensured by the user and the equipment is leak-tested by the contractor.

4.6.3.2 Pressure leak tests for pipeline distribution networks that are categorized by Decree no. 21/1979 Coll. as dedicated gas equipment shall be taken over by the gas equipment inspecting technician of the contractor. After the test has been successfully completed, he/she shall issue a report to the user, inspector and care taker, who shall ensure that the report is filed in the pipeline card or attached to the electronic pipeline card.

4.6.3.3 Pressure leak tests for other pipelines shall be carried out by a professionally qualified person of the contractor who shall prepare and sign a test report and passes it to the user, inspector and care taker, who shall ensure that the report is included in the pipeline distribution network card or attached to the electronic pipeline card.

4.6.3.4 The user shall cooperate with the inspector, contractor and care taker to carry out the pressure leak tests after repair.

4.7 Dimensional inspections of high pressure components

4.7.1 Dimensional inspection shall be carried out and the results shall be assessed according to N 16, N 18.

4.7.2 During dimensional inspection of high-pressure components, the parts directly connected to the mounted ones are also checked.

4.7.3 Dimensional inspection is performed by the contractor's quality control department (technical inspection department) at which the inspection was ordered. It issues a written report on the measurement and sends it to the care taker.

4.7.4 If dimensional inspection reveals that the high-pressure components have reached the limit wear, the care taker shall assess whether they can be used for a lower pressure stage or whether they are intended to be scrapped.

The parts usable for the lower pressure stage are distinguished from the parts for working overpressure of 32.5 MPa with the prescribed marking to be carried out by the supplier at which the inspection was ordered.

4.7.5 For non-compliant parts, the supplier at which the inspection was ordered shall issue a scrap report for scrapping.

4.7.6 Unsatisfactory components for which cannot be used for a lower pressure stage shall be destroyed by destroying the threaded ends.

4.7.7 High-pressure valves are not permitted to be used for any lower pressure stage when the limit wear for working overpressure of 32.5 MPa is reached.

4.7.8 For pipeline distribution networks of lower pressure stages and their inspections, which were assembled using components decommissioned for working overpressure of 32.5 MPa, the same principles apply as for the systems for working overpressure of 32.5 MPa.

4.8 Inspections when assembling high pressure equipment

4.8.1 Inspection of the assembly of high pressure equipment shall be carried out by an authorized employee of the care taker during repairs and after completion of repairs before the equipment is put into operation.

4.8.2 Authorized employees are entitled to have any component that does not have a registration number replaced after prior notice to the care taker. Replacement must be carried out in accordance with the repair schedule, which determines which component to be dismantled.

4.8.3 The assembly of the high pressure equipment shall be checked so that the location of installation can be recorded in the registration cards of the components subject to individual records. Based on this list, the operating hours and the location of the installation of the high pressure components can be determined from the cards.

4.8.4 In 12 (S) material class high pressure pipeline distribution networks, for installation of which the high pressure components manufactured in accordance with N 16, N 18 were used and for which it was demonstrably verified that the wall thickness loss allows internal revisions and wall thickness inspections in cycles of more than 3 years, the records and monitoring may be waived according to Art. 2.3 and such pipeline distribution networks shall be recorded according to Art. 2.1 and 2.2 of this standard.

4.9. Documentation of the results of checks, inspections and tests

4.9.1 The reports on implementation of inspections and tests according to Art. 4.3. and 4.6 shall be made by a responsible person (inspector, care taker). These records are uniform for the whole company and are issued in the form of printed matters.

4.9.2 The reports and their results are the basis for issuing care taker's job orders for the repair or replacement of pipeline distribution network.

4.9.3 The competent care taker shall keep original inspection reports of all types in the relevant pipeline distribution network passport.

5. Takeover from operation to repair and from repair to operation

5.1 Implementation of inspections and acceptance

Implementation of all kinds of repairs should be checked. Particular care must be taken when repairing pipeline distribution networks of groups I and II.

5.1.1 Handover of the pipeline distribution network for repair takes place by issuing the "Permit to work on the equipment" to the executing department under Regulation 465.

Takeover of the pipeline distribution networks after repair is carried out by the authorized representative of the user by termination of the "Permission to work on the equipment". Takeover is attended by the representatives of the contractor, user and care taker.

5.1.2 Assigning and organizing own repairs is handled within the PM SAP order system and in accordance with N 11 200. The care taker shall consult the repair procedure and the scope of the required technical documentation with the relevant inspector, in particular with regard to the required repair documents.

Welding work must be carried out in accordance with applicable standards. Inspection and implementation by the implementing company must be in accordance with the applicable product standard (e.g. ČSN EN 13 480).

5.1.3 The maintenance and inspection documents are kept by the care taker in the pipeline distribution network passport.

5.1.4 Inspections of newly performed surface protections or their repairs are carried out only by dept. of Material and corrosion testing facilities within the meaning of Regulation 317.

5.1.5 When checking pipeline distribution networks of all groups, the provisions of the articles of Chapter 5.1 are binding.

6. Takeover after construction

6.1 In case of documentation related to the implementation of investment projects, CTA (Central technical Archive) accepts it in cooperation with the relevant investment project manager in accordance with S350.

Takeover of the pipeline distribution networks after construction is carried out, similarly as with other investment projects, by the committee, whose members are the care taker and the inspector. The establishment of the committee is carried out by the relevant director of the department of the company to which TFA is taken over. If the pipeline distribution network is part of a larger production unit, it is taken over simultaneously with this equipment.

When taking over metal industrial pipelines, the requirements for manufacture, assembly, inspection and testing according to the product standard and the applicable ~~and~~ Government Regulation (in accordance with the applicable Directive of the European Parliament and of the Council on the approximation of the laws of the Member States concerning pressure equipment). The manufacturer shall determine conformity assessment procedures in accordance with the above regulations and ensure that the conformity mode is validated during manufacture, assembly, inspection and tests.

6.1.1 In case of the installation of pipeline distribution networks in the form of leasing (as part of the purchased technological equipment), the commercial contract must specify who will maintain this equipment. The leasing contract for the company is concluded by the Financial Management Department – FMD, the technical documentation is prepared by the technical department. If the maintenance is provided by the company, the technical department must hand over the documentation to the relevant care taker when taking over the pipeline distribution networks as after construction according to Art. 6.2. After the transfer of these pipeline distribution networks to the assets of the company and the assignment of inventory numbers, the investment department shall inform the care taker of this change. If another entity is designated as a care taker in the lease contract, the contracting entity shall include compliance with this standard in the contract being concluded.

6.2 When taking over, the representatives of the technical department of the company or the representatives of the external organizations must submit the documentation valid on the date of taking over to the committee. Final documentation, which contains a set of design documentation, manufacturing documentation and operating instructions (according to ČSN EN 13 480-5, table 9.5-1), must be handed over to the care taker (relevant documentation to the user) after termination of the contract, gradually or in whole, in accordance with the contract between the supplier and the company.

Final documentation

- Pipeline and machinery diagram (P & I diagram) - Article 6.2 (ČSN EN 13 480-5)
List of design and operating conditions
- Layout drawings of the pipelines and pipeline supports with dimensions (may include isometric drawings, assembly drawings, views, foundation arrangements) - Article 6.2; 6.3.1 (ČSN EN 13 480-5)
- Lists of pipeline parts and components with dimensions, standards, materials - Article 6.2 (ČSN EN 13 480-5)
- Material certificates for base materials and welding consumable electrodes, if required - Article 7.2.2 (ČSN EN 13 480-5)
- Documentation for various components e.g. valves, safety devices - Article 6.3.1 (ČSN EN 13 480-5)
- Welding documents - Article 6.2.3 (ČSN EN 13 480-5)

distribution network Cards” boxes for cycles of external inspections, NDT inspections and leak pressure tests shall be completed as determined by the relevant care taker and inspector. The representative of the investment department shall hand over the information provided on the first page of the pipeline distribution network cards to the Investment Accounting Department – FAD, including the name and sign of the care taker to whom the pipeline distribution network has been handed over for maintenance in accordance with S520

6.3 Immediately after takeover of the pipeline distribution network, the relevant care taker shall establish a passport within the meaning of paragraph 3 of this standard and N 11 985.

7. Operation of the pipeline distribution networks

7.1 Changes in operation of pipeline distribution networks

7.1.1 In case of deviations from the technological mode during operation, which could have a significant impact on the condition, emergency safety and service life of the pipeline, the user shall notify in writing the relevant care taker without delay and seek an opinion of the material and corrosion facility, if appropriate.

7.1.2 If the user intends to make such changes, he/she shall follow Regulation 843.

7.1.3 The competent department performing maintenance on the user's equipment shall, at the user's request, comment on the fundamental deviations, which may not coincide with the limits set by the technological regulation.

7.2 The user shall permanently ensure effective removal of sources of excessive corrosion and erosion.

8. Related standards and regulations

- ČSN 13 3060 - 4 Industrial valves Technical regulations Part 4: Documentation of valves
- ČSN 38 6405 Gas equipment. The principles of operation.
- ČSN EN 15001-1 Gas supply - Gas pipelines with an operating pressure greater than 0,5 bar for industrial use and gas pipelines with an operating pressure greater than 5 bar for industrial and non-industrial use - Part 1:

- Detailed functional requirements for design, materials, construction, inspection and testing
- ČSN 13 0072 Marking of the pipeline according to operating liquid
- ČSN EN 13 480 Industrial metal pipelines
Parts 1 to 6
(ČSN 13 0020)
- ČSN 13 0020 (CEN/TR 13 480 - 7:2002) Industrial metal pipelines - Part 7: Instructions for the use of conformity assessment procedures

- N 11 004 Operating rules for gas equipment
- N 11 005 Operating rules for pressure equipment
- N 10 051 Surface protection of metal structures and equipment
- N 11 062 Pressure strength and leak test (hydraulic)
- N 11 063 Pressure strength and leak test (pneumatic)
- N 11 200 Standard for taking over the equipment from operation to repair and from repair to operation
- N 11 985 Standard for keeping records of production equipment
- N 13 700 Pipeline marking according to flowing substances
- Group standards N 16, N 18

- Regulation 317 The principles of corrosion protection of machinery and technological equipment
- Regulation 348 Energy management
- Regulation 350 Technical drawing documentation
- Regulation 465 Issuing work permits
- Regulation 843 Changes in the technological process and manufacturing equipment
- Regulation 845 Handling rules
- Regulation 338 Input inspection of metal materials and products made of them by non-destructive methods

- Metrological rule

- COSO and CMO Decree no. 18/1979 Coll. - determining dedicated pressure equipment and setting out some conditions to ensure their security
- COSO and CMO Decree no. 21/1979 Coll. - determining dedicated gas equipment and setting out some conditions to ensure their security
- COSO and CMO Decree no. 554/1990 Coll.- amending and supplementing the Decree of the Czech Office on Occupational Safety and the Czech Mining Office no. 21/1979 Coll. determining dedicated gas equipment and stipulating certain conditions to ensure their safety.
- COSO and CMO Decree no. 85/1978 Coll. - on gas inspections, revisions and tests of gas equipment.

- Government Regulation no. 219/2016 Coll. - laying down technical requirements for pressure equipment
- Directive 68/2014/EU of the European Parliament and of the Council on the approximation of the laws of the Member States relating to pressure equipment

Annex 2 – 2nd page of the pipeline distribution network card – the record can be provided by records in PM SAP

list 2/4

Záznam vnějších prohlídek C, vnitřních prohlídek a tlakových zkoušek

Datum prohlídky	Číslo protokolu	Hlavní zjištěné závady	Datum odstranění závad	Návrh příští opravy	
				druh	datum

Annex 3 – 3rd page of the pipeline distribution network card – the record can be provided by records in PM SAP

list 3/4

Záznam oprav

Druh opravy	Číslo objednávky	Rozsah opravy	Datum ukončení opravy

Annex 4 – 4th page of the pipeline distribution network card – the record can be provided by records in PM SAP

list 4/4

Záznam kontrol flouštky stěny

Datum kontroly	
Číslo protokolu	
Hlavní zjištěné závady	
Datum odstranění závad	

Annex 6 – 1st page of the report on check (test) of the equipment**Protokol o prohlídce (zkoušce) zařízení skupiny - _____**

Číslo protokolu :	Technické místo - kód :	
	Číslo investičního majetku :	Podčíslo :
Název zařízení - název technického místa :		
Závod :	Výrobna :	Stavba :
Druh prohlídky (zkoušky) :		Datum :
Zjištěný stav :		

Annex 6 – 2nd page of the report on check (test) of the equipment

Strana 2/2

Navržená opatření :

Poznámky :

Jména a podpisy komise

Předseda :

Členové :