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FOREIGN TECHNOLOGY DIVISION

MACHINE PRODUCT RELIABILITY

EDITED TRANSLATION

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MACHINE PRODUCT RELIABILITY

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U. S. BOARD ON GEOGRAPHIC NAMES TRANSLITERATION SYSTEM

Block	Italic	Transliteration	Block	Italic	Transliteration
А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere.
When written as ё in Russian, transliterate as yё or ё.

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English	Russian	English	Russian	English
sin	sin	sh	sinh	arc sh	$\sinh^{-1}$
cos	cos	ch	cosh	arc ch	$\cosh^{-1}$
tg	tan	th	tanh	arc th	$\tanh^{-1}$
ctg	cot	cth	coth	arc cth	$\coth^{-1}$
sec	sec	sch	sech	arc sch	sech^{-1}
cosec	csc	csch	csch	arc csch	csch^{-1}

Russian	English
rot	curl
lg	log

STATE STANDARD OF THE USSR GOST 17526-72

MACHINE PRODUCT RELIABILITY

Information Collection and Processing System.

Requirements for Contents of Forms Recording Accrued Running Times, Damage, and Failures

By Resolution of the State Committee of Standards of the Council of Ministers USSR 28/1/1972 Nr. 326, the period of introduction is from 1/1/1973.

Nonobservance of the standard is prosecuted under the law

This standard establishes requirements for the subject matter and completion of forms to record accrued running time, damage, and failure which are used in the collection and processing of information on product reliability under operating conditions.

The standard is part of a group of state standards for collection and processing of information on machine product reliability.

This standard may serve as a basis for working out branch standards or instruction materials applicable to the specific features of a branch.

1. General Statements

1.1. Running-time, damage, and failure records (record forms) must ensure the opportunity to solve problems indicated in GOST 16468-70.

1.2. Record forms are regulated by this standard and by GOST 2.601-68.

1.3. In general, the following types of forms are provided for collection and processing of information:

primary record forms for operational data on reliability (pri

(primary record forms);

cumulative forms for operating information (cumulative forms);

record forms for reliability analysis results.

1.4. Primary record forms are intended for recording unsystematized information and are filled out at the site of operation.

1.5. Principal primary report forms are:

the log of running time, damage, and failures of items;

the log of technical servicing and repair of items;

one-time documents for operation of an item by the user-enterprise (trip ticket, assembly repair card, notice of item failure, etc.).

1.6. Cumulative forms are designed for recording information according to a required criterion and are completed from primary document data or during operational monitoring of an item by specially designated and trained personnel.

1.7. Principal cumulative information forms are:

the cumulative chart of item running time, damages, and failures;

the cumulative chart of data on item technical servicing and repair.

1.8. Record forms for reliability analysis results are designed for recording data on the quantitative and (or) qualitative results of reliability anaysis of an item and its components, on operating conditions, the actual consumption of spare parts, the causes of failures, and a list of parts and assembly units which limit the reliability of the item.

1.9. Principal forms for reliability analysis results are:

the summary list of evaluations of item reliability indices;

the summary list of evaluations of component reliability indices;

the summary list of types of item damage and failures;

the summary register of spare parts consumption;

the summary register of labor and costs for technical servicing and repairs.

The individual forms may be combined or divided into several parts.

1.10. The documentary set of record forms for each type of item shall be determined on the basis of paras. 1.5, 1.7, and 1.9 by the organization collecting (processing) the information, according to the type of item, the investigative goals, and the operating conditions.

1.11. The terms used in this standard are explained in an appendix.

2. Requirements for Subject matter of Record Forms And Their Completion

2.1. Primary record forms

2.1.1. The log of item running time, damage, and failures shall contain as required information:

certificate data on the item;

the name of the enterprise operating the item;

operating modes and conditions;

the date and time of item startup and shutdown;

the name of the damaged part or assembly unit;

running time since the beginning of operation (in units of

time or volume of work performed);

a description of the nature, outward manifestation. and suggested cause of damage or failure;

the time of detection and elimination of the damage or failure;

the means of eliminating the damage or failure.

2.1.2. The log of running time, damage, and failures is filled out for a group of similar items at the same work facility, or for each item individually.

2.1.3. The log is completed by maintenance personnel of the user-organization.

2.1.4. The log of technical servicing and repair of items shall contain as required information:

certificate data on the item;

the name of the enterprise operating (repairing) the item;

the name of the damaged assembly unit or part;

the date and time of technical servicing or repair;

the type of technical servicing or repair;

the means of eliminating damage or failure;

the duration of the technical servicing or repair;

The cost of the technical servicing or repair with consideration of the cost of replaced parts.

2.1.5. The log of technical servicing and repair of items is filled out for a group of similar items at the same work facility, or for each item individually.

2.1.6. The log is completed by a responsible representative of the department performing the technical servicing or repair.

2.1.7. One-time documents for operation of an item by the user enterprise shall in the aggregate contain information which makes it possible to complete cumulative forms and record forms for reliability analysis results.

2.2. Cumulative forms

2.2.1. The cumulative chart of item running time, damage, and failures shall contain as required information:

certificate data on the item;

the name of the enterprise using the item;

operating modes and conditions;

the date of appearance of damage or failure;

the name of damages [sic] of an assembly unit or part;

running time to each failure;

a description of the nature, outward manifestation, and suggested cause of the damage or failure;

the means of eliminating the damage or failure.

2.2.2. The cumulative chart of item running time, damage, and failures shall be completed for each item individually.

2.2.3. Cumulative charts of item running time, damage, and failures may be filled out simultaneously for the item as a whole and for its components.

2.2.4. The cumulative chart of data on item technical servicing and repair shall contain as required information:

certificate data on the item;

the name of the operating (repairing) enterprise;

the name of the damaged assembly unit or part;

the type of technical servicing or repair;

the duration and the labor requirements of the technical servicing or repair;

the cause of damage or failure;

the cost of the technical servicing or repair, with consideration of the cost of spare parts used.

2.2.5. The cumulative chart of data on item technical servicing or repair shall be completed for each item individually.

2.2.6. The cumulative information chart may be completed for the item as a whole and at the same time for its components.

2.3. Record forms for reliability analysis results

2.3.1. The summary list of evaluations of item (item component) reliability indices shall contain as required information:

certificate data on the item;

reliability indices of the item (of its components) which characterize qualities such as failure-free operation, longevity, and maintainability;

reliability-index point evaluations;

the operating modes and conditions involved in the reliability assessment.

2.3.2. The summary list of evaluations can be made for the item as a whole and (or) its components.

2.3.3. The summary list of item damage and failures shall contain as required information:

the certificate data on the item;

a list of damage and failures which have been detected during operation;

the cause of damage or failure;

the number of damages and failures of a given type;

average running time before damage (failure).

2.3.4. The summary list of types of item damage or failure is compiled from the results of observations of one item or several similar items.

2.3.5. Types of damage and failure in the summary list of evaluations are arranged according to importance of component parts or in descending order of failure occurence.

2.3.6. The summary register of spare parts consumption contains as required information:

certificate data on the item;

a list of replaceable parts of the item;

the number of replacements during the period of observation;

the cost of replaced parts;

cost of repair, including cost of parts and cost of work on their replacement.

2.3.7. The summary register of spare parts consumption is compiled from the results of observations of one item or several similar items.

2.3.8. The summary register of labor and costs for technical se-vicing or repair of an item contain as required information:

certificate data on the item;

the type of technical servicing or repair;

labor for technical servicing or repair;

cost of technical servicing or repair with consideration of the cost of replaced parts and work on their replacement.

2.3.9. The summary register of labor is compiled from results of observations of a group of similar items or each item individually.

3. Requirements for Tables of Code Numbers for Coded Information

3.1. With tables of code numbers for codable information, the cumulative forms may be completed in coded form.

3.2. Tables of code numbers for codable information shall contain:

a list of groups of the information to be coded (item type, name of manufacturing plant, operating conditions, operating modes, types and causes of failures, etc.);

code numbers for each group of information being coded;

"keys" for entering coded information onto machine-processing cards.

3.3. The tables of code numbers for information being coded shall be unified for similar items, regardless of the departmental affiliation of the information-gathering and processing organization.

The code numbers used shall be based on the classifier of industrial products and design documentation.

3.4. The code-number tables are established by the head organization according to the particular type of item.

3.5. Code numbers for information on component parts of an item shall be drawn up by the information-gathering or information-processing organization and shall be coordinated with the corresponding code numbers for the item as a whole.

4. Requirements for Instructions on Completion of record forms

4.1. Instructions for completing record forms shall be drawn up by organizations gathering and processing data on reliability.

4.2. The instructions shall contain the necessary information for proper entry of data obtained from monitoring of operations.

4.3. The instructions shall be an independent document attached to each record form, and shall agree with methodological materials on information-gathering worked out or approved by the head organizations for the particular type of item in accordance with GOST 16468-70.

APPENDIX to GOST 17526-72
Reference

TERMS AND DEFINITIONS USED IN THE STANDARD

Term	
1. Operation	The total preparation and use of items for their intended function, technical maintenance, storage, and transportation
2. Controlled operation	Operation of a given number of items in conformance with the requirements of technical documentation, accompanied by monitoring of each item by specially trained personnel. NOTE. The operating conditions and mode and the control results are noted in record forms
3. Operating conditions	The totality of factors acting on an item during operation. NOTE. The operating conditions include: climatic and road conditions, operator skills, supply of materials, etc.
4. Operating mode	The totality of operating parameters of an item during its use for its intended purpose.

	tended function. NOTE. Operating modes involve: power, speed, capacity, operating cycle, duration of uninterrupted work, etc.
5. Base of operational observations	A user-organization performing controlled operation of an item
6. Plan of observations	The total data establishing the number of objects and duration of observations
7. Planning of observations	The selection of the object, the conditions for operational observations, and the plan of observations
8. Operational observations	A process providing necessary and sufficient information about the subject of the operational observations
9. Continuous observations	Uninterrupted operational observations of an item from the start of operation up to a given accrued running time or a given state. NOTE. Continuous observations may be performed for a whole series of items or for selected items.
10. Periodic observations	Operational observations performed periodically over set intervals of time or running time. NOTE. Periodic observations may be performed for a whole series of items or for selected items
11. Object of operational observations	An item under observation during operation
12. Information on item reliability	The total qualitative and (or) quantitative data characterizing the reliability of an item
13. Operational information on item reliability	Information on item reliability obtained during operational observations
14. Primary record form for operational information on item reliability	A form for registering operational information on item reliability at the place where it is obtained
15. Cumulative form for operating information *cumulative form*	A form for registering data which have been classified on the basis of a required criterion; the form is completed from the data of primary record forms for operational information on item reliability. NOTE. In technically justified cases cumulative forms may be completed in the process of operational observations
16. Record form for reliability-analysis results	A form for registering data about results of quantitative and (or) qualitative analysis of item reliability
17. Reliability index point evaluation	A value for an index of the reliability of an item, determined from statistical data
18. Quantitative analysis	Analysis of information on the reli-

of information on item reliability	-ability of an item in order to evaluate indices of reliability, parameters, and distribution functions, and to determine the interconnections between indices and the factors affecting them.
19. Qualitative analysis of information on item reliability	Analysis of information on the reliability of an item in order to determine qualitative characteristics of the item's reliability. NOTE. Qualitative characteristics of item reliability include: failure characteristics, causes of damage or destruction, etc.

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