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| <p><b>Implementacija principa Ljudskih Faktora u priručnicima za održavanje</b></p> <p><b>Sigurnosna direktiva ASO-2011-005</b><br/>Broj revizije: 0 / 23.05.2011.<br/>Pokretač: Agencija za civilno zrakoplovstvo (u daljnjem tekstu ACZ)</p> <p><b>Područje primjene:</b><br/>Ova sigurnosna direktiva primjenjuje se na vlasnike/operatora zrakoplova (izuzev ELA1 zrakoplova i balona), certificirane organizacije za vođenje kontinuirane plovidbenosti i certificirane organizacije za održavanje zrakoplova.</p> <p><b>Referentni propisi:</b><br/>Zakon o zračnom prometu (Narodne novine, broj 69/09), članci 56. &amp; 57.<br/>Pravilnik o kontinuiranoj plovidbenosti zrakoplova i aeronautičkih proizvoda, dijelova i uređaja, te ovlaštenju organizacije i osoblja uključenih u te poslove (Narodne novine broj 115/09, 152/09, 72/10 i 139/10)</p> <p><b>Referentne smjernice:</b><br/>ICAO Aneks 6<br/>ICAO Dokument 9683 Ljudski faktor – priručnik za školovanje<br/>ICAO Dokument 9824 Ljudski faktor- Vodič za priručnik održavanja u zrakoplovstvu<br/>Pravilnik o kontinuiranoj plovidbenosti zrakoplova i aeronautičkih proizvoda, dijelova i uređaja, te o ovlaštenju organizacije i osoblja uključenih u te poslove, (Narodne novine broj 115/09, 152/09, 72/10 i 139/10)</p> <p><b>Svrha:</b><br/>Ova Sigurnosna direktiva izdana je u svrhu poboljšanja procedura i načina rada, kako bi rezultati održavanja bili kvalitetniji, kao i ujednačavanja prakse izrade priručnika koji se koriste u održavanju zrakoplova, uvođenjem principa Ljudskih faktora.</p> | <p><b>Implementation of Human Factors in Maintenance Manuals</b></p> <p><b>Air Safety Order ASO-2011-005</b><br/>Revision No. 0 / 23.05.2011.<br/>Initiated by: Croatian Civil Aviation Agency (hereinafter: CCAA)</p> <p><b>Applicability:</b><br/>This Air Safety Order is applicable to the aircraft owner/operator (except ELA1 aircraft and balloons), certified continuing airworthiness organization and certified maintenance organization.</p> <p><b>Regulation Reference:</b><br/>Air Traffic Act (Official Gazette, No. 69/09), Articles 56. &amp; 57.<br/>Regulation on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organizations and personnel involved in these tasks („Official Gazette“ No.:115/09,152/09, 72/10 and 139/10).</p> <p><b>Guidance Material Reference:</b><br/>ICAO Annex 6<br/>ICAO Document 9683 Human Factor Training Manual<br/>ICAO Document 9824 Human Factors Guidelines for Aircraft Maintenance Manual<br/>Commission Regulation on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (EC 2042/2003)</p> <p><b>Purpose:</b><br/>This Air Safety Order was issued for the purpose of improving procedures and working methods, to improve maintenance results, and harmonize the practice of making Maintenance manual, the introduction of the principles of Human Factors.</p> |
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| <p><b>1. Dizajn programa održavanja</b></p> <p>Osnovni zahtjev prema ICAO Aneksu 6, Part I, 11.3.1 je da program održavanja sadrži sljedeće informacije:</p> <ul style="list-style-type: none"> <li>- zadatke održavanja</li> <li>- definirane intervale u kojima se provode ti zadaci</li> </ul> <p>Tijekom definiranja intervala i zadataka održavanja treba uzeti u obzir predviđeno /očekivano iskorištenje zrakoplova.</p> <p>Vlasnik/operator ima dodatnu odgovornost dizajniranja programa održavanja koji uključuje principe Ljudskih faktora. Program održavanja treba sadržavati informacije u takvom obliku kako bi mogle biti primijenjene od Organizacije za održavanje zrakoplova uvažavajući principe Ljudskih faktora.</p> <p>Dizajn programa održavanja ima dva aspekta: prvo, definiranje aktualnih radnih zadataka i drugo, oblik i prikaz dokumenta programa.</p> <p>Dizajn dokumenta programa održavanja zrakoplova treba poštivati principe Ljudskih faktora.</p> <p>Organizacija za održavanje zrakoplova mora uspostaviti procedure prihvatljive za ACZ uzimajući u obzir Ljudske Faktore i ljudsku izvedbu za osiguranje dobre prakse održavanja i udovoljavanje svih odgovarajućih zahtjeva ove Sigurnosne direktive, koje moraju uključivati jasne radne naloge ili ugovore kako bi zrakoplov i zrakoplovne komponente bile vraćene u upotrebu u sigurnom stanju i u skladu sa propisima.</p> <p><b>2. Dokumenti sustava održavanja</b></p> <p>Dokumenti sustava održavanja moraju sadržavati sljedeće:</p> <ul style="list-style-type: none"> <li>- Radne upute iz odobrenih programa održavanja su lako i precizno razumljive direktno mehaničarima/inženjerima održavanja ili im mogu biti lako i precizno prenesene</li> <li>- principe poštivanja Ljudskih faktora u opisu organizacije hangara ili radionica</li> <li>- Procedure, upute i postupke koji omogućuju mehaničarima/inženjerima održavanja da primjenjuju program održavanja dosljedno i ispravno</li> </ul> | <p><b>1. Design of the maintenance programme</b></p> <p>Basic requirement according ICAO Annex 6, Part I, 11.3.1 is that maintenance programme contain the following information:</p> <ul style="list-style-type: none"> <li>- maintenance tasks</li> <li>- intervals at which these are to be performed</li> </ul> <p>During definition intervals and tasks must be taking into account the anticipated utilization of the airplane</p> <p>Owner/operator has the additional responsibility of designing a programme that observes Human Factor principles and providing this information in such a way that it can be applied by the maintenance organisation while observing Human Factor principles.</p> <p>The design of a maintenance programme has two aspects: first, the definition of actual work task and, second, the design and presentation of the programme document itself.</p> <p>The design of the operator's aircraft maintenance programme document should observe Human Factors principles.</p> <p>The Maintenance organization must establish procedures acceptable to CCAA taking into account Human Factors and human performance to ensure good maintenance practices and compliance with all relevant requirements in this regulation which must include a clear work order or contract such that aircraft and aircraft components may be released to service in a safe condition and in accordance with regulations.</p> <p><b>2. Maintenance system documents</b></p> <p>The maintenance system documents must contain following:</p> <ul style="list-style-type: none"> <li>- Task instructions from the approved maintenance programme that can be either easily and accurately understood directly by maintenance mechanics/engineers or can be easily and accurately transcribed for them</li> <li>- Human Factor principles regarding description of hangar or facilities</li> <li>- Procedures, instructions and practices that enable maintenance mechanics/engineers to apply the maintenance programme consistently and correctly</li> </ul> |
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| <p>- Svo osoblje u održavanju ima znanje iz Ljudskih faktora i vještine adekvatne dodijeljenim zadacima i odgovornostima.</p> <p>Svi dokumenti sustava održavanja, priručnici i programi održavanja trebaju uključivati teme kao što su:</p> <ul style="list-style-type: none"> <li>- uspostavljanje i objavljivanje kompanijske politike zrakoplovne sigurnosti</li> <li>- uspostavljanje, u organizacijama održavanja, sustava upravljanja greškama u održavanju, kao jednog od elemenata „kulture sigurnosti“</li> <li>- specifične procedure izmjene smjena koje odražavaju industrijsku „dobru praksu“ unutar industrije</li> <li>- planiranje radnih sati, dijelova, alata i poslova uzimajući u obzir zamor i pritisak koji se odražava na radnu sposobnost</li> <li>- dvostruke kontrole ili specifične kontrole kritičnih točaka ili ispitivanja</li> <li>- izbjegavanje kontrole i potpisivanja završenih zadataka od strane neautoriziranog osoblja</li> <li>- kompanijske procedure trebaju biti napisane i implementirane tako da uzimaju u obzir principe Ljudskih faktora.</li> </ul> <p>Odgovorni rukovoditelj (ili glavni izvršitelj) je odgovoran za uspostavljanje i promicanje zahtijevane politike sigurnosti i kvalitete.</p> <p>Kada je potrebno predati nastavak održavanja ili završne radove održavanja iz razloga izmjene smjena ili osoblja, relevantne informacije moraju biti adekvatno prosljeđene između odlazećeg i dolazećeg osoblja u skladu sa procedurama prihvatljivim za ACZ.</p> <p>Planiranje zadataka održavanja, uključujući organizaciju rada u smjenama, moraju uzeti u obzir ograničenja radnih sposobnosti.</p> <p>Procedure trebaju biti uspostavljene tako da se mogu otkriti i popraviti greške u održavanju koje mogu, rezultirati propustom u održavanju, neispravnosti ili kvarom i utjecati na sigurnost operiranja zrakoplova. Procedure trebaju odrediti metodu otkrivanja pogrešaka, i s njima povezanih zadataka održavanja ili procesa. Tipična procedura uključuje obavljanje dvostruke kontrole gdje su zadaci ili procesi obavljani od</p> | <p>- All maintenance personnel having Human Factors knowledge and skills appropriate to the assigned tasks and responsibilities.</p> <p>All maintenance system documents, manuals and maintenance programmes will include topics such as:</p> <ul style="list-style-type: none"> <li>- the establishment and promulgation of a company-wide aviation safety policy</li> <li>- the establishment in the Maintenance organisations of a maintenance error management system as one element of a “safety culture”</li> <li>- a specific shift hand over procedure which reflects industry “best practice”</li> <li>- planning of manpower, parts, tools and work to take into account the fatigue and pressure effects on human performance</li> <li>- duplicate or specific required inspections of critical points or tests</li> <li>- avoidance of inspection and sign-off on completion of tasks by non-authorized personnel</li> <li>- company procedures to be written and implemented to take into account Human Factors principles.</li> </ul> <p>The Accountable manager (or Chief Executive Officer) is responsible for establishing and promoting the required safety and quality policy.</p> <p>When it is required to hand over the continuation or completion of a maintenance action for reasons of a shift or personnel changeover, relevant information must be adequately communicated between outgoing and incoming personnel in accordance with a procedure acceptable to CCAA.</p> <p>The planning of maintenance task, including the organizing of shifts, must take into account human performance limitations.</p> <p>Procedures should be established to detect and rectify maintenance errors that could, as a minimum, result in a failure, malfunction or defect and angering the safe operation of the aircraft. The procedure should identify the method for capturing errors, and the maintenance tasks or processes concerned. A typical procedure could include the performance of duplicate inspections where the task or process is performed by one suitably qualified person and</p> |
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| <p>strane jedne odgovarajuće kvalificirane osobe i gdje su zatim neovisno provjeravani i verificirani od druge odgovarajući kvalificirane osobe, ili dodatnim funkcionalnim provjerama ili provjerama istjecanja.</p> <p>Organizacija za održavanje zrakoplova mora imati sistem koji odgovara količini i složenosti radova, kako bi planirala raspoloživost potrebnog osoblja, alata, opreme, materijala, podataka za održavanje i objekata u cilju osiguranja sigurnog završetka radova održavanja. Pri uspostavljanju procedure planiranja održavanja, treba se uzeti u obzir:</p> <ul style="list-style-type: none"> <li>- logistika</li> <li>- kontrola inventara</li> <li>- smještajna površina</li> <li>- očekivani radni sati</li> <li>- raspoloživi radni sati</li> <li>- priprema radova</li> <li>- raspoloživost hangara</li> <li>- koordinacija s unutarnjim i vanjskim dobavljačima</li> <li>- planiranje sigurnosno kritičnih zadataka tijekom perioda kada je osoblje u najvišem stupnju pozornosti</li> </ul> <p>Svi zadaci održavanja ili grupe zadataka trebaju biti potpisani. Da bi osigurali da je zadatak ili grupa zadataka završena, trebaju biti potpisani tek nakon obavljanja. Zadaci koje obavlja nekompetentno osoblje trebaju biti provjereni od strane autoriziranog osoblja prije nego se potpiše da su završeni.</p> <p>Kompetencija osoblja uključenog u rukovođenje održavanjem i/ili audite kvalitete mora biti utemeljena i kontrolirana u skladu sa procedurom i standardom prihvatljivom za ACZ. Potrebna stručnost za odgovarajuću poziciju, odnosno osposobljavanje mora uključivati obučenos i razumijevanje primjene Ljudskih Faktora i pitanja radne sposobnosti vezano uz funkciju pojedinca unutar organizacije.</p> <p style="text-align: center;"><b>3. Sprječavanje grešaka i strategije upravljanja greškama</b></p> <p>Predložene su tri klase strategija upravljanja ljudskim greškama u održavanju zrakoplova. Svaka od ovih klasa je definirana u smislu metode za kontrolu grešaka:</p> | <p>then independently checked and verified by second suitably qualified person, or the inclusion of an additional functional or leak check.</p> <p>The Maintenance organisation must have a system appropriate to the amount and complexity of work to plan the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities in order to ensure the safe completion of the maintenance work. When establishing the production planning procedure, consideration should be given to the following:</p> <ul style="list-style-type: none"> <li>- logistic</li> <li>- inventory control</li> <li>- square metres of accommodation</li> <li>- estimation of man-hours</li> <li>- availability of man-hours</li> <li>- preparation of work</li> <li>- hangar availability</li> <li>- coordination with internal and external suppliers, and</li> <li>- scheduling of safety-critical tasks during periods when staff are likely to be most alert.</li> </ul> <p>Every maintenance task or group of tasks should be signed off. To ensure the task or group of task is completed, it should only be signed off after completion. Work by non-competent personnel should be checked by authorized personnel before they sign off.</p> <p>The competence of personnel involved in maintenance management and/or quality audits must be established and controlled in accordance with a procedure and to a standard acceptable to the CCAA. Necessary expertise related to the job function, competence must include an understanding of the application of Human Factors and human performance issues related to the person's function in the organization.</p> <p style="text-align: center;"><b>3. Error prevention considerations and strategies</b></p> <p>Three classes of strategies to manage human error in the maintenance of aircraft are proposed. Each of these classes is defined in terms of its method for controlling error:</p> |
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a) **Smanjenje grešaka.** Strategije smanjenja grešaka planiraju interveniranje direktno na sami izvor greške. Primjeri strategija smanjenja grešaka uključuju poboljšanje dostupnosti dijelu zrakoplova, poboljšanje rasvjete pri kojoj se obavljaju zadaci održavanja i osiguranje boljeg školovanja/osposobljavanja zrakoplovnih mehaničara.

b) **Hvatanje grešaka.** Hvatanje grešaka pretpostavlja da je greška već napravljena. Pokušava se „uhvatiti“ prije odlaska zrakoplova. Primjeri strategija hvatanja grešaka uključuju inspekcije nakon izvršenog zadatka, verifikaciju koraka unutar zadatka i funkcionalnu i operativnu provjeru nakon izvršenih radova.

c) **Tolerancija grešaka.** Tolerancija grešaka poziva se na mogućnost sustava da prihvati grešku bez katastrofalnih (ili ozbiljnih) posljedica. U slučaju održavanja zrakoplova, tolerancija grešaka može se odnositi i na konstrukciju samog zrakoplova kao i na dizajn sustava održavanja. Primjeri tolerancije grešaka uključuju inkorporiranje višestrukih hidro ili elektro sustava na zrakoplovu (tako da pojedina ljudska greška može onesposobiti samo jedan sustav) i program strukturalne inspekcije koji omogućavaju brojne prilike za pronalaženje pukotina od zamora prije nego dostignu kritičnu dužinu

#### 4. Utjecaj Ljudskih faktora na održavanje zrakoplova

Organizacije za održavanje zrakoplova trebaju prepoznati sljedeće teme vezane za okolinu koje su važne u kontekstu Ljudskih Faktora.

##### Objekti i radna okolina:

Radna okolina ima veliki utjecaj na izvršitelja radova.

##### - Rasvjeta

Ljudi nisu dovoljno vješti obavljati precizne poslove pod lošim osvjetljenjem. Veličina većine hangara predstavlja problem za dobro osvjetljenje.

Većim dijelom, osvjetljenje za posebne zadatke je osigurano ručnim svjetiljkama ili ručnim lampama.

a) **Error reduction.** Error reduction strategies are intended to intervene directly at the source of the error itself. Examples of error reduction strategies include improving access to a part, improving the lighting in which a task is performed and providing better training to the maintenance technician.

b) **Error capturing.** Error capturing assumes the error is made. It attempts to “capture” the error before the aircraft departs. Examples of error-capturing strategies include post-task inspection, verification steps within a task and post-task functional and operational tests.

c) **Error tolerance.** Error tolerance refers to the ability of a system to accept an error without catastrophic (or even serious) consequences. In the case of aircraft maintenance, error tolerance can refer to both the design of the aircraft itself as well as design of the maintenance system. Examples of error tolerance include the incorporation of multiple hydraulic or electrical systems on the aircraft (so that a single human error can only take out one system) and a structural inspection programme that allows for multiple opportunities to catch a fatigue crack before it reaches critical length.

#### 4. Human Factors issues affecting aircraft maintenance

The Maintenance organisation should identified following environmental issues which are important in the context of Human Factors:

##### Facilities and work environment:

Work environment can have a strong effect on technician performance.

##### - Lighting

Humans are not very adept at performing precision work with low levels of illumination. The size of most hangars presents some challenging lighting problems.

A great deal of lighting for specific tasks is provided by hand-held torches or flashlights.

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| <p>Vanjsko, noćno održavanje zahtijeva posebnu pažnju za potrebom osvjtljavanja.</p> <p>- Buka<br/>         Mnogi zvukovi su neophodni za pravilno obavljanje posla, kao glasovna komunikacija ili audio signali opreme. Buka je nepoželjni zvuk i može odvrćati pažnju, te biti stresna.<br/>         Operacije održavanja zrakoplova su obično u razmacima bučne, kao aktivnosti zakivanja, rad sa strojevima u hangaru, ispitivanje motora ili pokretanje. Buka može prouzročiti ometanje govora i utjecati na zdravlje. Bučna ili intenzivno bučna okolina rezultira pojačavanjem reakcije autonomnog živčanog sustava. Rezultat može biti premor. Stalna izloženost buci može rezultirati trajnim gubitkom sluha.<br/>         Aktivnosti koje će operator poduzeti u rješavanju problema buke uključivat će kontrolirane izvore buke ograđivanjem ili izolacijom strojeva, odvajanjem bučnih aktivnosti kako bi manje osoba bilo izloženo buci, osiguravanjem štitnika za uši i zahtijevanim korištenjem istih, smanjenjem pokretanja ili ispitivanja motora do minimalno prihvatljivog, te mjerenjem nivoa buke u radnom prostoru.</p> <p>- Toksični materijali<br/>         Uposlenici trebaju biti informirani i školovani o opasnostima vezano za rukovanje toksičnim materijalima. Trebaju biti instruirani o odgovarajućim metodama rukovanja i opskrbljeni zaštitnim sredstvima kao što je zaštitna odjeća, gumene rukavice i naočale.</p> <p>- Skladištenje i pristup: Potreban je brz pristup alatima, ugrađenim uređajima, ispitnoj opremi, materijalima, dijelovima, radnim platformama, procedurama i tehničkoj dokumentaciji.</p> <p>- Radne platforme: mnogi dijelovi velikih komercijalnih aviona su daleko iznad nego što je moguće dosegnuti sa poda. Da bi se dosegnulo ta područja, potrebna su radne platforme različitih veličina i tipova;</p> <p>- Temperatura, vlažnost i strujanje zraka: Uvjeti izvan prilično ograničenog opsega prilično brzo mogu smanjiti radne sposobnosti – i fizičke i mentalne.</p> | <p>Outdoor, night-time maintenance activity demands careful attention to lighting needs.</p> <p>- Noise<br/>         Many sounds are essential for the proper conduct of the work, such as voice communication or audio signals from equipment. Noise is unwanted sound and can be distracting and stressful.<br/>         Aircraft maintenance operations are usually intermittently noisy due to activities such as riveting, machinery operation inside hangars, or engine testing or run-up on ramps. Noise can cause speech interference and can also have health implications. Loud or intense noise tends to result in heightened response of the human autonomic nervous systems. One of the results can be fatigue. Regular exposure to loud noise can result in permanent hearing loss.<br/>         Actions that can be taken by operators to deal with noise problems include controlling noise sources by enclosing or insulating machinery, isolating noisy activities so that fewer people are exposed, providing workers with hearing protection and requiring its use, reducing engine run-up or testing to the minimum acceptable and measuring noise levels in work areas.</p> <p>- Toxic materials<br/>         Employees should be informed of and trained on the hazards associated with handling toxic materials. They should be instructed in proper handling methods and provided with protective devices such as protective clothing, rubber gloves and goggles.</p> <p>- Storage and retrieval: Quick access to tools, fixtures, test equipment, materials, parts, portable work platforms, procedures and technical documentation is necessary;</p> <p>- Work platforms: many parts of large commercial aircraft are well beyond the reach of a being on the floor. To reach these areas, various sizes and types of work platforms are required;</p> <p>- Temperatures, humidity and airflow: Conditions outside a fairly narrow range can quickly degrade human capabilities - both physical and mental.</p> |
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Croatian Civil Aviation Agency

## Sigurnosna direktiva Air Safety Order

### Razmjena informacija i komunikacija:

Komunikacija je vjerojatno najvažnija tema Ljudskih Faktora u održavanju zrakoplova. U području održavanja je veoma mnogo informacija koje moraju biti stvorene, prenesene, usvojene, korištene i zabilježene kako bi se flota održala plovibnom. Vrlo je važno da informacije o održavanju budu razumljive za korisnike kojima su namijenjene.

### Školovanje:

Članovi tima trebaju biti školovani za zadatke koje će obavljati. Školovanje je neophodno naročito za novoformirane grupe tehničara, koji su naviknuti na samostalni rad. Školovanje treba uključivati metode grupnog odlučivanja, razvijanja vještina međusobno i rad sa ostalim članovima tima. U ovakvom slučaju produktivnost neće biti pretjerano smanjena ukoliko pojedini članovi tima ne mogu izvesti pojedinu operaciju.

### 5. Dodaci vezani uz ovu sigurnosnu direktivu

Dodatak 1 - Dizajn dokumenata za održavanje zrakoplova

U Zagrebu, 23.05. 2011.

Za Agenciju za civilno zrakoplovstvo  
For Croatian Civil Aviation Agency

Omer Pita, dipl.ing.

Direktor

### Information exchange and communication:

Communication is possibly the most important Human Factors issue in aircraft maintenance. In maintenance realm there is an enormous volume of information that must be created, conveyed, assimilated, used and recorded in keeping the fleet airworthy. It is most important that maintenance information be understandable to the target audience.

### Training:

Team members should be trained for their roles. This training is necessary especially for newly formed groups of people who were accustomed to working as individual technicians. The training should include methods of group decision making, development of interpersonal skills and working with other team members. In this way the team's productivity will not be overly impaired if a team member cannot perform.

### 5. Annexes to this ASO

Annex 1 - Document design for aircraft maintenance

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| <p><b>DODATAK 1 - Dizajn dokumenata za održavanje zrakoplova</b></p> <p>Prilikom izrade dokumenata koji se koriste u održavanju zrakoplova treba uvažiti sljedeće principe:</p> <ul style="list-style-type: none"> <li>- osigurati da dizajn procedura i izmjena uključuje osoblje održavanja koje dobro poznaje zadatke održavanja</li> <li>- potvrditi sve procedure i promjene procedura prije upotrebe</li> <li>- osigurati da su procedure precizne, prikladne i primjenljive, te da uključuju dobru zrakoplovnu praksu</li> <li>- uzeti u obzir razinu stručnosti i iskustvo korisnika</li> <li>- uzeti u obzir u kojem radnom okruženju će procedura biti korištena</li> <li>- osigurati da su sve važne informacije uključene, bez nepotrebne složenosti procedure</li> <li>- gdje je to primjereno, objasniti razlog zbog kojeg je procedura uspostavljena</li> <li>- osigurati da redoslijed zadataka i koraka odražava dobru praksu</li> <li>- ako redoslijed koraka nije zadan, razmisliti o grupiranju postupaka prema logici ili prostoru (npr. rad na dijelovima zrakoplova, kao sa pilotskim check listama), suprotno od alfabetskog poretka ili prema ATA poglavljima</li> <li>- grupirati korake u „dijelove“ i planirati prekide</li> <li>- osigurati dosljednost u izgledu procedura i korištenju terminologije, skraćenica, referenci ...</li> <li>- gdje je moguće, pokušati osigurati da je kompletna procedura ili dio informacija na jednoj stranici. Kada je procedura na više od jedne stranice, jasno to i naznačiti.</li> <li>- uključiti jasne naslove na vrhu svake stranice i sekcije procedure. Kad je procedura promijenjena, naglasiti tu promjenu (linijom ili slovom „R“ na rubu stranice) i zabilježiti datum revizije na dnu stranice</li> <li>- izbjegavati unakrsne reference gdje god je moguće</li> <li>- logični slijed treba biti jasan, korištenjem dijagrama toka ako je potrebno</li> <li>- grupirati povezane korake na stranici; odvojiti nepovezane korake na stranici. Koristiti primjereno prazne redove ili prostor.</li> </ul> | <p><b>ANNEX 1 - Document design for aircraft maintenance</b></p> <p>In the production of documents which are used in aviation maintenance are required following:</p> <ul style="list-style-type: none"> <li>- ensure procedure design and changes involve maintenance personnel who have a good working knowledge of the tasks</li> <li>- validate all procedures and changes to those procedures before use</li> <li>- ensure procedures are accurate, appropriate and usable, and that they reflect best practice</li> <li>- take into account the level of expertise and experience of the user</li> <li>- take into account the environment in which the procedures are to be used</li> <li>- ensure that all key information is included without the procedure being unnecessarily complex</li> <li>- where appropriate, explain the reason for the procedure</li> <li>- ensure that the order of tasks and steps reflect best practice</li> <li>- if order of steps is not already dictated, consider ordering the steps according to logic or space (e.g. working around the aircraft sequentially, as with a pilot's checklist), as opposed to alphabetical or ATA chapter order</li> <li>- group steps into “chunks” and plan for interruptions</li> <li>- ensure consistency in the design of procedures and use of terminology, abbreviations, references, etc.</li> <li>- where possible, try to ensure that a complete procedure or chunk of information on one page. Where a procedure runs to more than one page, make this clear</li> <li>- include clear titles at the top of each page and section of the procedure. When the procedure has been changed, highlight this change where appropriate (with a line or the letter “R” at the side of the page), and note the revision date at the bottom of the page</li> <li>- avoid cross-referencing where possible</li> <li>- logical flow should be clear, using a flow chart if necessary</li> <li>- group associated steps on the page; separate non-associated steps on the page, Use blank lines or spaces appropriately</li> </ul> |
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| <ul style="list-style-type: none"><li>- koristiti dosljedno naglašavanje (npr. <i>nakošeno</i> ili <b>izraženo</b>). Izbjegavati pretjeranu upotrebu velikih slova za naglašavanje; manja slova su lakša za čitanje. Izbjegavati pretjeranu upotrebu nakošenih slova, rezervirati ih za jednu riječ ili kratku frazu, ili za zabilješku. Uokvirivanje je korisno za razlikovanje veoma važnih koraka ili dijelova od manje važnih dijelova ili koraka</li><li>- dijagrami ili fotografije mogu biti vrlo korisni</li><li>- umetnuti upozorenja i zabilješke u procedure gdje god je potrebno</li><li>- razmotriti korištenje upozorenja, opomena ili zabilješki za isticanje važnih točaka i koraka gdje su moguće greške</li><li>- istaknuti naredbe, reference, upozorenja, opomene, zabilješke, procedure i metode.</li><li>- koristiti opomene i upozorenja direktno iznad teksta</li><li>- opomene, upozorenja i zabilješke moraju biti na istoj stranici kao i tekst na koji se odnose</li><li>- gdje je praktično, ugraditi polja u procedure da omogućue i osiguraju korisniku provjeru da su svi koraci procedure odrađeni</li><li>- jasno označiti poveznicu polja za provjeru sa pripadajućim korakom, npr. korištenjem isprekidanih crtica</li><li>- omogućiti dovoljno prostora ako informacija treba biti unesena</li><li>- naglasiti važnost čitkog rukopisa ako pisanu informaciju treba koristiti druga osoba</li><li>- osigurati dobru kvalitetu ispisa/kopije, te da ima dovoljno štampača, kopirnih uređaja i sl.</li><li>- osigurati osposobljavanje za tehnologiju korištenja pristupa i ispisa procedura i podataka za održavanje.</li></ul> <p><b>- Čitljivost informacija</b></p> <p>Veličina stranice:</p> <ul style="list-style-type: none"><li>- Koristiti standardnu veličinu papira (A4).</li></ul> <p>Izgled stranice:</p> <ul style="list-style-type: none"><li>- Koristiti jednu kolonu, jer ovakav izgled olakšava čitanje.</li><li>- Označiti svaku stranicu sa pripadajućim naslovom na vrhu.</li><li>- Svaku stranicu označiti brojem u donjem desnom kutu.</li><li>- Nema potrebe završavati svaku stranicu na istom mjestu, npr. kraj stranice može biti na različitom mjestu.</li></ul> | <ul style="list-style-type: none"><li>- use emphasis (e.g. italics and bold) consistently. Avoid overuse of upper case for emphasis; lower case is easier to read. Avoid overuse of italics, reserving this for single words or short phrases only, or for notes. Boxing is useful to distinguish very important steps or chunks from less important steps or chunks</li><li>- a diagram or photograph can be very useful</li><li>- insert warnings and notes into the procedure wherever necessary</li><li>- consider the use of warnings, cautions or notes to highlight important points and steps where errors are likely</li><li>- distinguish between directive, information, reference information, warnings, cautions, notes, procedure and methods</li><li>- use cautions and warnings directly above the text</li><li>- cautions, warnings and notes must be on the same page as the text to which they refer</li><li>- where practical, build in check boxes into the procedure to enable and encourage the user to check off steps as they are completed</li><li>- clearly link the check box with the associated step, e.g. using dotted lines</li><li>- allow enough space if information needs to be entered</li><li>- stress the importance of clear handwriting if written information needs to be handed over to another person</li><li>- ensure that printing/copy quality is good, and that there are enough printers, copiers, etc.</li><li>- provide training on the use of technology to access and print procedures and maintenance data</li></ul> <p><b>- Information readability</b></p> <p>Page size:</p> <ul style="list-style-type: none"><li>- use a standard paper size (A4).</li></ul> <p>Page layout:</p> <ul style="list-style-type: none"><li>- use a single column layout as this is easier for lower-level readers and does not affect more experienced readers</li><li>- label each page with a subject heading at the top</li><li>- number each page sequentially placing the numbers at the lower right corner</li><li>- there is no need to end every page at the same point, i.e. the baseline can vary from page to page</li></ul> |
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| <p><b>Poravnanje:</b></p> <ul style="list-style-type: none"><li>-Koristiti lijevo poravnanje. Centralno i desno poravnanje je zbunjujuće i usporava čitanje.</li></ul> <p><b>Odlomci i uvlačenja:</b></p> <ul style="list-style-type: none"><li>- Koristiti stil sa dva prazna reda za razdvajanje odlomaka.</li><li>- Označiti redoslijed svakog naslova i podnaslova, npr. 1, 1.1, 1.1.1 ...</li><li>- U sklopu jednog naslova, pisati odlomke ispod polovine stranice u duljinu, kako bi pomogli čitateljevoj koncentraciji.</li><li>- Ostavi jedan red prazan između odlomaka.</li><li>- Ne uvlači početak svakog odlomka.</li></ul> <p><b>Prored:</b></p> <ul style="list-style-type: none"><li>- Koristiti 1:2 odnos poreda između poreda rečenica i poreda odlomaka.</li><li>- Koristiti prazan redak za razdvajanje odlomaka i naslova.</li><li>- Koristiti jedno prazno mjesto iza zareza, dvotočke i točke-zareza.</li><li>- Koristiti dva prazna mjesta iza razdoblja, upitnika i uskličnika.</li></ul> <p><b>Oblici pisma (fonta):</b></p> <ul style="list-style-type: none"><li>- Koristiti oblik pisma (fonta) koji ima relativno veliku visinu, ima umjerenu širinu, uvjerljivog prije nego ugodnog izgleda, i ima potpuno uniformirane oblike, na primjer Times Roman, Century Series, New Gothic ili Helvetica.</li><li>- Držati se dosljedno oblika pisma unutar dokumenta i između dokumenata.</li></ul> <p><b>Veličina pisma (fonta):</b></p> <ul style="list-style-type: none"><li>- Koristiti veličinu između 9 i 12 točaka radi lakšeg čitanja. Najbolja veličina je 11 ili 12 točaka.</li></ul> <p><b>Naglašavanje:</b></p> <ul style="list-style-type: none"><li>- Držati se dosljedno načina naglašavanja unutar dokumenta i između dokumenata.</li><li>- Za isticanje jedne riječi, koristi <b>izraženo</b> (prvenstveno), a <u>podvučeno</u>, <i>nakošeno</i> ili sva VELIKA SLOVA na drugom mjestu.</li><li>- Za isticanje dužih odlomaka, koristiti <b>izraženo</b> ili <u>podvučeno</u>. Izbjegavati VELIKA SLOVA ili <i>nakošeno</i> jer usporavaju čitanje i smanjuju razumijevanje teksta.</li></ul> | <p><b>Justification:</b></p> <ul style="list-style-type: none"><li>- use left justification. Centre and right justification is distracting and can slow reading speed</li></ul> <p><b>Paragraphs and indentation:</b></p> <ul style="list-style-type: none"><li>- Use modified block style with two space indentation for subdivision</li><li>- Label each heading and sub-heading sequentially, i.e. 1, 1.1, 1.1.1, etc</li><li>- Within a heading, keep paragraphs below half a page in length, to help the reader's concentration</li><li>- Leave one blank line between paragraphs</li><li>- Do not indent the start of each paragraph</li></ul> <p><b>Spacing:</b></p> <ul style="list-style-type: none"><li>- Use 1:2 space ratio between sentence spacing and paragraph spacing</li><li>- Use one blank line to separate all paragraphs and headings</li><li>- Use one space after commas, colons and semicolons</li><li>- Use two spaces after periods, question marks and exclamation marks</li></ul> <p><b>Typeface (font):</b></p> <ul style="list-style-type: none"><li>- Use the typefaces (fonts) which have a relatively large height, are moderately expanded, solid rather than delicate looking, and have fairly uniform type colour, for example, Times Roman, Century Series, New Gothic, or Helvetica.</li><li>- Keep the font consistent throughout the document and between documents.</li></ul> <p><b>Type size (font size):</b></p> <ul style="list-style-type: none"><li>- Use sizes between 9 and 12 points for ease of reading. The best size for most uses is 11 or 12 points.</li></ul> <p><b>Emphasis:</b></p> <ul style="list-style-type: none"><li>- Keep a consistent use of emphasis throughout the document and between documents.</li><li>- To emphasize a single word, use bold (most preferred), underlining, italics or all capitals (least preferred)</li><li>- To emphasize a lengthy passage, use bold or underlining. Avoid CAPITALS or italics as they slow reading and reduce comprehension.</li></ul> |
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| <p>- Koristiti isključivo jednu ili dvije tehnike isticanja unutar dokumenta da bi povećali razumijevanje. <b>Izraženo</b> ili <u>podvučeno</u> su dobar izbor.</p> <p>- Ne koristiti previše tehnike isticanja kako ne bi izazvali konfuziju i smanjili razumijevanje.</p> <p>Odgovori:</p> <p>- Ako koristite polja za provjeru uz pripadajuću instrukciju, ne koristiti veliki razmak između polja za provjeru i instrukcije</p> <p>- Izbjegavati upisivanje „nije zahtijevano“ ili „XXXX“ u polja za potpis, ukoliko korisnik dokumenta nije odgovoran za zatvaranje instrukcije</p> <p>- Koristiti dosljedno izgled polja za provjeru kroz cijeli dokument, ukoliko je moguće</p> <p>- Predvidjeti dovoljno prostora ukoliko se očekuje odgovor od korisnika dokumenta</p> <p>Boje:</p> <p>- Izbjegavati redovito korištenje boja u ilustracijama. Koristiti crno-bijelo sjenčanje umjesto boja.</p> <p>- Papir u boji se ne fotokopira dobro.</p> <p>- Crna tinta na bijelom papiru je preporučljiva.</p> <p><b>Numeriranje stranica</b></p> <p>- Izbjegavati korištenje bilo kakvi referenci unazad, na prethodni tekst.</p> <p>- Izbjegavati reference na druge dijelove dokumenta, ukoliko je moguće. Neizbježne unakrsne reference moraju biti precizne i nepogrešive.</p> <p>- Stranica treba izgledati kao prirodno nastali sklop informacija; npr. treba sadržavati primjereni broj zadataka i izbjeći prenošenje zadataka na drugu stranicu</p> <p>- Svaki zadatak koji počinje na jednoj stranici treba i završiti na toj stranici.</p> <p>- Minimizirati usmjeravanje; drugim riječima ne upućivati korisnika od stranice do stranice kada to može prouzročiti ozbiljne pogreške.</p> <p><b>Slova, brojevi i riječi</b></p> <p>Slova i brojevi:</p> <p>- Koristiti mala slova umjesto velikih, jer su znatno lakša za čitanje. Uzeti u obzir da velika slova zauzimaju više prostora (40 do 45 posto više od malih) i smanjuju brzinu čitanja za 13 do 20 posto.</p> | <p>- Use only one or two emphasis techniques within a document to increase comprehension. Bold and underlining are good choices.</p> <p>- Do not overuse emphasis techniques as it causes confusion and reduces comprehension.</p> <p>Responses:</p> <p>- If you are using a check box following the related instruction, do not use a large gap between the check box and the instruction.</p> <p>- Avoid the use of a sign box with “Not Required” or “XXXX” if the user of the document is not responsible for the instruction accomplishment.</p> <p>- Use a consistent check box design throughout the document if it is possible.</p> <p>- Give enough space if you are expecting any answer from the user.</p> <p>Colour:</p> <p>- Avoid regular use of colour in illustrations. Use distinctive shading patterns within black line images instead of colour.</p> <p>- Coloured paper does not photocopy well.</p> <p>- Black ink on white paper is recommended.</p> <p><b>Pagination</b></p> <p>- Avoid use of any reference back to previous text.</p> <p>- Avoid references to other sections of the document as far as possible. Unavoidable cross references must be precise and unmistakable.</p> <p>- The page should act as a naturally occurring information module, i.e. it should contain an appropriate number of tasks and avoid carryover of task across pages.</p> <p>- Each task that begins on a page should also end on that page.</p> <p>- Minimize the routing; in other words, do not route the user from page to page since it can cause serious defects.</p> <p><b>Letters, numbers and words</b></p> <p>Letters and numbers:</p> <p>- Use lower case letters instead of upper case in the text since lower case letters are much easier to read. Note that upper case letters occupy more space (40 to 45 per cent more than lower case letters) and reduce the reading speed</p> |
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| <p>- Koristiti velika i mala slova u naslovima i podnaslovima, umjesto velikih slova, kako biste poboljšali čitljivost</p> <p>- Izbjegavati crtice kojima je jedina funkcija rastavljanje riječi na kraju reda</p> <p>- U nizu riječi ili izjava koje predstavljaju međusobno isključive odabire, umetnuti „ili“ kroz seriju kako bi povećali razumijevanje</p> <p>- Izbjegavati korištenje rimskih brojeva budući da nisu lako čitljivi i mogu izazvati zabunu</p> <p>- Koristiti arapske brojeve slijedeći razdoblje za svaku stavku u listi, ukoliko je potrebno koristiti brojeve. Ukoliko nije, koristiti znakove ili crtice kako bi privukli pažnju korisnika</p> <p>- Ne stavljati brojeve u zagrade</p> <p>- Koristiti uobičajeni (ATA stil) crtica-broj stil kao poglavlje-sekcija-tema-stranica (npr. 26-09-01-02)</p> <p>Riječi:</p> <p>- Izbjegavati korištenje različitih termina za isti pojam.</p> <p>- Koristiti precizne, neambiciozne i uobičajene riječi, sa kojima su korisnici dokumenta upoznati, dosljedno kroz dokument</p> <p>- Ne koristiti mnogo prijedloga; to uzrokuje sporije čitanje</p> <p>Kratice:</p> <p>- Koristiti samo poznate kratice i odgovarajuće imenice.</p> <p>- Izbjegavati kratice. Ukoliko se moraju koristiti tad ih koristiti dosljedno i koristiti prvih par slova kako bi podsjetili čitatelja na riječ</p> <p>- Osigurati objašnjenje kratica u dokumentu</p> <p><b>Dobro pisanje</b></p> <p>Općenito o pisanju:</p> <p>- Probati dostići omjer između sažetosti, razrađenosti i preopširnosti informacija.</p> <p>- Pisati jasne, jednostavne, precizne i samo objašnjavajuće instrukcije</p> <p>- Minimizirati pisane zahtjeve za korisnike dokumenata</p> <p>- Sumirati glavne ideje</p> <p>- Koristiti odgovarajuće informacije u koracima instrukcije</p> | <p>by 13 to 20 per cent.</p> <p>- Use mixed-case headings and sub-headings instead of all capitals to improve readability.</p> <p>- Avoid hyphens which merely indicate word division at the end of a line.</p> <p>- In series of words or statements which present mutually exclusive choices, making the “or” explicit throughout the series enhances comprehension.</p> <p>- Avoid using Roman numerals since they are not easy to read and can cause confusion.</p> <p>- Use Arabic numbers followed by a period for each item in your list if you should use numbers. If not, you can use a bullet or dash to get the attention of the user.</p> <p>- Do not enclose the number in parentheses.</p> <p>- Use a conventional (ATA style) dash-number break-down such as chapter-section-subject-page (e.g. 26-09-01-02).</p> <p>Words:</p> <p>- Avoid using different terms for the same object.</p> <p>- Use precise, unambiguous and common words, with which the user of the document is familiar, throughout the document for consistency. (AECMA Simplified English is a suitable guide.)</p> <p>- Do not use many prepositions; they cause the user to read slowly.</p> <p>Abbreviations:</p> <p>- Use only known acronyms and proper nouns.</p> <p>- Avoid abbreviations. If you have to use abbreviations, then use them consistently and use the first few letters to remind the reader of the word.</p> <p>- Provide a glossary if the users need one.</p> <p><b>Writing well</b></p> <p>General considerations on writing:</p> <p>- Try to achieve a balance between brevity, elaboration and redundancy of information.</p> <p>- Write clear, simple, precise and self-explanatory instructions.</p> <p>- Minimize the writing requirement for the users of the document.</p> <p>- Summarize the main ideas.</p> <p>- Use adequate information in the instruction steps.</p> |
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| <p>- Tekst treba biti napisan dosljednim i standardnim slaganjem riječi u rečenici.</p> <p>- Tekst treba biti jednako kratak i jasan kao i praktičan.</p> <p>- Koristiti logičnu strukturu rečenica i odlomaka kako bi bile jednostavnije za razumijevanje i pamćenje.</p> <p>Logična mjesta:</p> <ul style="list-style-type: none"> <li>- opći prije specifičnih zahtjeva</li> <li>- važni prije manje važnih zahtjeva</li> <li>- česti zahtjevi prije, i</li> <li>- stalni prije povremenih zahtjeva.</li> </ul> <p>Rečenice:</p> <p>- Koristiti pojednostavljeni rječnik što je više moguće.</p> <p>- Koristiti kratke rečenice umjesto dugačkih, budući da su kratke rečenice lakše za čitanje i razumijevanje</p> <p>- Koristiti jasne i potvrdne rečenice u aktivnom vremenu, umjesto negativne forme rečenice i pasivnog vremena, jer aktivna forma povećava razumijevanje</p> <p>- Koristiti rečenice sa osobnim zamjenicama, kako bi povećali razumijevanje i motivaciju čitatelja</p> <p>- Rečenice sa više zavisnih klauzula teško se razumiju</p> <p>- Koristiti glagole u aktivnom obliku jer su lakši za čitanje i razumijevanje</p> <p>- Ne koristiti dugačke nizove imenica u rečenici, jer su teško razumljive</p> <p>- Koristiti kompletnu rečenicu sa „koji“ i „koje“ kako bi bila jasnija</p> <p>- Koristiti treće lice za definiranje kao u sljedećem:<br/>„Torzioni sklop prenosi torziono opterećenje od osovine do amortizera.“</p> <p>- Koristiti drugo lice imperativa samo u operativnim procedurama kao u sljedećem:<br/>„Provjeri razinu ulja.“</p> <p>- Ideje izražene u pozitivnom obliku su jasnije za razumijevanje</p> <p>- Direktno izraziti što se želi reći bez suvišnih ili nepotrebnih riječi, jer je rečenica sa nepotrebnim riječima teža za čitanje i razumijevanje i duže se čita.</p> <p>Nabrajanje i tabele:</p> <ul style="list-style-type: none"> <li>- Podaci i informacije prikazane u tabelama omogućavaju razumijevanje i usporedbu</li> <li>- U nabravanjima i tabelama, ne ostavljati praznine unutar reda veće od pet praznih mjesta</li> <li>- Grupirati redove u nabravanjima i tabelama prema sadržaju</li> </ul> | <p>- Text should be written in a consistent and standardized syntax.</p> <p>- Text should be as brief and concise as practicable.</p> <p>- Use a logical structure of sentences and paragraphs since they are easier to understand and remember.</p> <p>Logically place:</p> <ul style="list-style-type: none"> <li>- General before specific provisions;</li> <li>- Important before lesser provisions;</li> <li>- Frequent provisions first; and</li> <li>- Permanent before temporary provisions.</li> </ul> <p>Sentences:</p> <p>- Use simplified language (e.g. AECMA Simplified English) as much as possible.</p> <p>- Use short sentences instead of long ones since short sentences are easier to read and understand.</p> <p>- Use definite and affirmative sentences in the active tense instead of using negative forms and passive tenses since the active voice increases comprehension.</p> <p>- Use sentences with personal pronouns since they increase comprehension and the reader's motivation.</p> <p>- Sentences with many subordinate clauses are difficult to comprehend.</p> <p>- Use action verbs because they are easier to read and understand.</p> <p>- Do not use sentences with a long noun string, since they are hard to understand.</p> <p>- Use sentences complete with the necessary "who" and "which" words to clarify the relative clauses.</p> <p>- Use third person for definitions as follows:<br/>"The torsion link assembly transmits torsional loads from the axle to the shock strut."</p> <p>- Use second person imperative only for operational procedures as follows:<br/>"Check the oil level."</p> <p>- Ideas expressed in positive terms are easier to understand.</p> <p>- State directly what you want to say without excess or unnecessary words since the sentences with unnecessary words are harder to understand and take longer to read.</p> <p>Lists and tables:</p> <ul style="list-style-type: none"> <li>- Data and information presented in the tables facilitate understanding and comparison.</li> <li>- In lists and tables, do not leave blanks within a line greater than five spaces.</li> <li>- Group the lines in lists and tables according to content.</li> </ul> |
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| <ul style="list-style-type: none"> <li>- Ne grupirati više od pet redova zajedno</li> <li>- Odvojiti grupe u nabranjanjima i tabelama poredima</li> <li>- Napisati nabrojene stavke u paralelnoj izvedbi, jer olakšava čitanje i pamćenje</li> <li>- Nabrojiti serije stavaka, uvjeta, i slično radije nego ih prikazati u serijama odvojenima zarezima</li> <li>- Izbjegavati korištenje složenih pitanja i navoda</li> <li>- Minimizirati logično povezana pitanja, koliko god je moguće</li> <li>- Sastaviti pitanja na način koji zahtjeva minimalno memoriranje korisnika dokumenta</li> </ul> <p>Grafičke informacije:</p> <ul style="list-style-type: none"> <li>- Postaviti vizualne stavke u tekstu dokumenta pokraj teksta na koji se odnose. Ukoliko to nije moguće, postaviti vizualne stavke u dodatku, označiti stavke i pozvati se na njih.</li> <li>- Koristiti jasne naslove sa brojem slike ili tabele u redu direktno ispod svih ilustracija</li> <li>- Koristiti isti naslov za ilustracije koji je korišten kao naslov teksta na koji se odnosi</li> <li>- Dosljedno koristiti i horizontalni i položeni format sa početkom ilustracije na poveznom rubu ili vertikalno poravnanje za prikazivanje grafičkih informacija za lakše čitanje i unakrsne reference</li> <li>- Odgovarajući tekst mora biti naveden da podrži ilustracije, ne obrnuto.</li> <li>- Crtati ilustracije u veličini i značaju reda kako bi mogle biti korištene bez ikakvih preinaka za prikazivanje materijala na ekranu projektora u svrhu školovanja</li> <li>- Ilustracije trebaju imati ograničene informacije da bi izbjegle neprecizan izgled.</li> <li>- Koristiti ilustracije kao prvenstveni izvor prijenosa informacija</li> <li>- Prikazivati sve prostorne informacije u grafičkom formatu, umjesto u tekstualnom formatu</li> <li>- Označiti svaku tabelu i sliku arapskim brojem, kao Tabela 1. i Slika 1.</li> <li>- Koristiti jednostavne crteže, koji su najbolji u većini slučajeva</li> <li>- Dosljedno koristiti format za izgled slika i označavanje brojevima</li> <li>- Koristiti ilustracije kad god će one pojednostaviti, skratiti ili omogućiti olakšano razumijevanje teksta</li> <li>- Ne koristiti komplicirane referentne brojeve za slike, kao npr. T07-40423-001</li> </ul> | <ul style="list-style-type: none"> <li>- Do not group more than five lines together.</li> <li>- Separate the groups in the list and table by spacing.</li> <li>- Write the list of items in parallel construction since that way is easier to read and remember.</li> <li>- List a series of items, conditions, etc. rather than displaying them in a series separated by commas.</li> <li>- Avoid using compound questions and statements.</li> <li>- Minimize the logically related question as much as possible.</li> </ul> <p>Construct the questions in a way which requires minimum memory use from the user of the document.</p> <p>Graphic information:</p> <ul style="list-style-type: none"> <li>- Place the visual item in the text of a document near the discussion to which it relates. If it is not possible, place the visual item in an appendix, label the item and refer to it.</li> <li>- Use a clear title with a figure or a table number on the line directly below all illustrations.</li> <li>- Use the same title for illustrations as corresponding text subject title.</li> <li>- Use either a horizontal-landscape format with the top of illustration at the binding edge or vertical layout to present graphic information for ease of reading and cross-reference consistently.</li> <li>- Adequate text must be supplied to support illustrations, not vice versa.</li> <li>- Draw illustrations in a size and line weight such that they can be used without any rework for the production of material for screen projection in a training environment.</li> <li>- Illustrations should have limited information in order to avoid a cluttered appearance.</li> <li>- Use illustrations as the primary source of information transfer.</li> <li>- Present all spatial information in graphical format instead of in textual format.</li> <li>- Label each table and figure with an Arabic numeral, such as Table 1 and Figure 1.</li> <li>- Use simple line drawings, which are superior in most cases.</li> <li>- Use a consistent format for figure layout and numbering.</li> <li>- Use illustration whenever they will simplify, shorten or make the text easier to understand.</li> <li>- Do not use complicated reference numbers for figures, e.g. T07-40423-001.</li> </ul> |
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| <ul style="list-style-type: none"><li>- Izbjegavati korištenje dijelova crteža u perspektivi kao slika.</li><li>- Pogled slike treba biti kao što je korisnik vidi</li><li>- Koristiti standarde i ispravnu terminologiju tehničkog crtanja, npr. izbjegavati zamjensko korištenje termina „sekcija“ i „pogled“</li><li>- Referirati se na sve tabele i slike u tekstu brojevima</li><li>- Koristiti položene stupčaste grafikone kako bi omogućili usporedbu brojčanih podataka kad god je moguće</li><li>- Linijski grafikoni pomažu razumijevanju trendova i omogućavaju usporedbu između dvije i više brojčanih vrijednosti</li></ul> <p><b>Printanje i kvaliteta kopiranja</b></p> <ul style="list-style-type: none"><li>- Provjeravati toner redovito kako bi imali dosljednu kvalitetu kopija</li><li>- osigurati da glavna slika ostane vidljiva i jasna prilikom umnožavanja sa originala</li><li>- Koristiti papir koji ima refleksiju od najmanje 70 posto</li><li>- Koristiti slabu vizualnu rezoluciju i veću veličinu slova ako će korisnik koristiti dokument pod slabim osvjetljenjem</li><li>- Čitatelji daju prednost papiru bez sjaja nad srednje ili sjajnim papirom</li><li>- Više zamućen papir je poželjniji</li><li>- Koristiti crnu tintu na bijelom papiru jer je više učinkovito od bijele tinte na crnom papiru</li><li>- Razviti i koristiti standarde za zamjenu traka za printanje, tonera i slično, kako bi uvijek osigurali dosljednu kvalitetu kopija.</li></ul> <p><b>Organizacijska pitanja</b></p> <ul style="list-style-type: none"><li>- Omogućiti potencijalnim korisnicima radnih kartica da sudjeluju u kreiranju dokumenta.</li><li>- Provjeriti svaku pojedinu instrukciju provjeravajući je u stvarnoj situaciji.</li><li>- Ukoliko će dokument imati više kopija, boje će biti korisna pomoć u distribuciji.</li><li>- Imati sustav povratnih informacija kako bi korisnici bili sigurni kako da isprave pogrešan unos .</li></ul> | <ul style="list-style-type: none"><li>- Avoid use of perspective part drawings as figures.</li><li>- The figure views should be as the user sees it.</li><li>- Use standard and correct technical drawing terminology, e.g. avoid use of terms “section” and “view” interchangeably.</li><li>- Reference all tables and figures in the text by the numbers.</li><li>- Use bar chart to make accurate comparison of numerical data whenever possible.</li><li>- Line charts (or graphs) help to understand trends and allow accurate comparison between two or more numerical values.</li></ul> <p><b>Printing and copying quality</b></p> <ul style="list-style-type: none"><li>- Check the toner box regularly to have consistent copy quality.</li><li>- Make sure that no major image degradation occurs with reproductions of originals.</li><li>- Use paper which has a reflectance of at least 70 per cent.</li><li>- Use low visual acuity and large type size if user is going to use the document under low illumination levels.</li><li>- Readers prefer matt paper to medium or glossy paper.</li><li>- High opacity paper is preferable.</li><li>- Use black ink on white paper since it is more effective than white ink on black paper.</li><li>- Develop and implement standards for changing printer ribbons, toner boxes, etc. to ensure a consistent print quality at all times.</li></ul> <p><b>Organization issues</b></p> <ul style="list-style-type: none"><li>- Allow the prospective users of work cards to participate in the design of the document.</li><li>- Check every individual instruction by testing it in the field situation.</li><li>- If your document is going to include multiple copies, colour can be a useful processing aid.</li><li>- Have a feedback system so that users are aware of how to correct an erroneous entry.</li></ul> |
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