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, 15, 49005, ; e-mail: dnikolayev@gmail.com

1. Flight-loads measurements during launch and exit. NASA/SP-8002, NASA (Washington, DC, USA). 1964. 8 . URL:http://everyspec.com/NASA/NASA-SP-PUBS/NASA_SP-8002_4235/ (21.12.23).
2. Crocker M. J. The Vibroacoustic Environment of Spacecraft During Launch and Flight. Sound and Vibration. 2002. Vol. 36. No. 6. P. 5.
3. Kabe A. M., Kim M. C., Spiekermann C. E. Loads Analysis for National Security Space Missions. The Aerospace corporation of magazine of advances in aerospace technology. Crosslink. Winter 2003/2004. Vol. 5. No. 1. P. 20–25.
4. Load Analyses of Spacecraft and Payloads. NASA Technical Standard. NASA-STD-5002. 1996. P. 14. URL: <https://standards.nasa.gov/sites/default/files/standards/NASA/A/0/nasa-std-5002a.pdf> (7.01.24).
5. Spacecraft dynamic environment testing. NASA technical book. NASA-HDBK-7008. NASA. Washington. DC 20546-0001. 2014. P.134. URL: http://everyspec.com/NASA/NASA-NASA-HDBK/NASA-HDBK-7008_52000/ (7.01.24).
6. . . . 2009. 504 .
7. Antares User's Guide. Northrop Grumman Corp. Release 3.1. September 2020. URL: <https://www.northropgrumman.com/wp-content/uploads/Antares-User-Guide-1.pdf> (7.01.24).
8. Soyuz at the Guiana Space Centre User's Manual Issue 2 – Revision 0 March 2012. URL: <https://www.arianespace.com/wp-content/uploads/2015/09/Soyuz-Users-Manual-March-2012.pdf> (7.01.24).
9. Falcon User's Guide. Space Exploration Technologies Corp. (SpaceX). 2021-09. URL: <https://www.spacex.com/media/falcon-users-guide-2021-09.pdf> (21.12.23).
10. Tuma, Margaret & Chenevert, Donald & Leahy, Bart Objectives and Progress on Ground Vibration Testing for the Ares Launch Vehicles. Conference: 47th AIAA Aerospace Sciences Meeting including The New Horizons Forum and Aerospace Exposition. URL: <https://doi.org/10.2514/6.2010-2026> (14.12.23).
11. Boeing Changes Delta III Control Software, Boeing News Release October 1998. URL: <https://boeing.mediaroom.com/1998-10-15-Boeing-Changes-Delta-III-Control-Software> (14.12.23).
12. De Selding, Peter B. Harsh Report Issued on Ariane 5 Failure. Space News. 2003. January. . 3.
13.1969. 496 .

14. 2017. 2. . 34–42.
15. *Katorgin B. I., Chvanov V. K., Chelkis F. J. and Michael Popp, Lawrence G. Tanner, Robert C. van Giessen, Scott J. Connally* RD-180 Engine Production and Flight Experience. 40th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit 11 – 14 July 2004. Fort Lauderdale, Florida. URL: <https://arc.aiaa.org/doi/book/10.2514/MJPC2004> (21.12.23).
16. *Begishev A. M., Zhuravlev V. Y., Torgashin . S.* Features and modernization methods of thrust measurement devices for liquid rocket engine test stands. *Siberian Journal of Science and Technology*. 2020. Vol. 21. No. 1. P. 62–69. URL: <https://doi.org/10.31772/2587-6066-2020-21-1-62-69> (7.01.24).
17. 1989. 296 .
18. *Katorgin B. I., Semyonov V. I., Chvanov V. K., Chelkis F. Yu* Engine RD171M. Conversion in mechanical engineering. 2006. N 1. URL: <http://lpre.de/resources/articles/history.htm> (7.01.24).
19. 1972. 507 .
20. *Michael Cerna, Audrey F. Harvey* The Fundamentals of FFT-Based Signal Analysis and Measurement. 340555B-01. National Instruments Corporation. July 2000. URL: https://www.sjsu.edu/people/burford.furman/docs/me120/FFT_tutorial_NI.pdf (14.12.23).
21. 2014. 420 .
22. 2004. 4 (12). . 62–73.
23. 2016. 2. . 16–31.
24. *Oppenheim B. W., Rubin S.* Advanced Pogo Stability Analysis for Liquid Rockets. *Journal of Spacecraft and Rockets*. 1993. Vol. 30. No. 3. P. 360 – 383. <https://doi.org/10.2514/3.25524>
25. 2013. 2. C. 18–25.
26. *Kohnke P.* Ansys Inc. Theory Manual. 001369. Twelfth Edition Canonsburg: SAS IP. 2001. 1266 .
27. 1977. 352 .
28. *Krebs Gunter Dirk* "Tsiklon". *Gunter's Space Page*. Retrieved 2016-07-05. URL: https://space.skyrocket.de/doc_lau/tsiklon.htm (7.01.24).
29. *Pylypenko O. V., Khoroshylov S. V., Nikolayev D. O.* Development of vibration protection systems of spacecraft – state of the art and perspectives. . 2023. 29(5). . 003-019. <https://doi.org/10.15407/knit2023.05.003>

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01.03.2024