APPENDIX A

References

A-1. U.S. Army Corps of Engineers (USACE) Documents.

Engineering and Construction Bulletin (ECB) 2006-11. Tainter Gate Trunnion Lubrication. 23 August 2006, http://www.wbdg.org/ccb/ARMYCOE/COEECB/ARCHIVES/ecb_2006_11.pdf.

EM 385-1-1 USACE. *Safety and Health Requirements.* 30 November 2014, http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=4XA-6GMfAH4%3d&tabid=16439&portalid=76&mid=43544.

EM 1110-2-2602. *Planning and Design of Navigation Locks*. 30 September 1995, http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=PWFBdS5uORQ%3d&tabid=16439&portalid=76&mid=43544.

EM 1110-2-2607. *Planning and Design of Navigation Dams*. 31 July 1995, http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=1J1ymdxRBtc%3d&tabid=16439&portalid=76&mid=43544.

EM 1110-2-2610. *Mechanical and Electrical Design of Navigation Locks and Dams*. 30 June 2013, http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=u-1aHGtWT_8%3d&tabid=16439&portalid=76&mid=43544.

EM 1110-2-2701. *Vertical Lift Gates*. 30 November 1997, http://planning.usace.army.mil/toolbox/library/EMs/em1110.2.2701.pdf.

EM 1110-2-2702. *Design of Spillway Tainter Gates*. 01 January 2000, http://planning.usace.army.mil/toolbox/library/EMs/em1110.2.2702.pdf.

EM 1110-2-3102. *General Principles of Pumping Station Design and Layout*. 28 February 1995, http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-3102.pdf.

EM 1110-2-3105. *Mechanical and Electrical Design of Pumping Stations*. (Change 2). 30 November 1999, http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-3105.pdf.

EM 1110-2-3200. *Wire Rope Selection Criteria for Gate Operating Devices*. 02 April 2004. http://www.publications.usace.army.mil/Portals/76/Publications/EngineerManuals/EM_1110-2-3200.pdf.

EM 1110-2-4205. *HydroElectric Power Plants: Mechanical Design*. 30 June 2013, http://planning.usace.army.mil/toolbox/library/ERs/ER1110.2.4205.pdf.

ER 1110-2-100. *Periodic Inspection and Continuing Evaluation of Completed Civil Works Structures*. 15 February 1995, http://asktop.net/wp/download/28/ER%201110-2-100%20Periodic%20Inspection%20and%20Continuing%20Evaluation%20of%20Completed%20Civil%20Works%20Structures.pdf.

ER 1110-2-112. *Required Visits to the Construction Sites by Design Personnel*. 15 April 1992, http://www.publications.usace.army.mil/LinkClick.aspx?fileticket=ddGmD6LhKiU%3d&tabid=16441&portalid=76&mid=43546.

ER 1110-2-109. *Hydroelectric Design Center*. 01 November 2001, http://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1110-2-109.pdf.

ER 1110-2-1150. *Engineering and Design for Civil Works Projects*. 31 August 1999, http://www.publications.usace.army.mil/Portals/76/Publications/EngineerRegulations/ER_1110-2-1150.pdf.

Kumar et al. 2002, Kumar, A., L. D. Stephenson, and P. Willis. 2002. Advanced materials selection guide for lock, dam, and hydroelectric plant components. ERDC/CERL TR-02-7. Champaign, IL: U.S. Army Engineer Research and Development Center.

Jones, John A., Richard A. Palylyk, Paul Willis, and Robert A. Weber. 1999. *Greaseless bushings for hydropower applications: Program, testing, and results*. ERDC/CERL TR-99/104. Champaign, IL: Engineer Research and Development Center, Construction Engineering Research Laboratory (ERDC-CERL).

Micetic, John S., and Alfred D. Bietelman. 2004. *Performance Problems with Group II Hydrocracked Turbine Oils in Corps of Engineers Hydropower Facilities*. ERDC/CERL TR-04-28/ADA428907. Champaign, IL: ERDC-CERL.

Race et al. 2004, Race, T. D., A. Kumar, and L. D. Stephenson. Field evaluation of self-lubricated mechanical components for civil works navigation structures. ERDC/CERL SR-04-8. Champaign, IL: U.S. Army Engineer Research and Development Center.

Clifton and Beitelman 1989, Clifton, W. B., and A. Beitelman. Lubricants for hydraulic structures. REMR-EM-5 USACERL. Champaign, IL: U.S. Army Corps of Engineers.

Miller and Bell 2011, Miller, Stefan M. and Bell Brian P. 2011, Greaseless Bushings, Operating Machinery, and Casting Challenges on the West Closure Complex 225' Sector Gate, In Proceedings, USACE Infrastructure Conference, Atlanta, GA, June 2011.

USACE Inland Marine Transportation System (IMTS), Standard Maintenance of Navigation Locks and Dams, 2010 (draft).

Wridge and Sawka 2010, Wridge, R. S., and M. J. Sawka. 2010. Applications of self-lubricating materials in Portland District, The Dalles miter gate: Use of composites materials for adjustable quoin and miter blocks. In Proceedings, USACE Regional Navigation Design Team Meeting, Greaseless Bearings, Portland District, 15-16 September.

Paulus 2014, Paulus. T. 2014. PIANC presentation and technical paper, Lock Machinery and Equipment Lubrication, Design Issues and Emerging Trends, 2014 PIANC World Congress.

A-2. Code of Federal Regulations.

21 CFR 178.3570, Lubricants with Incidental Food Contact.

1910.120, Hazardous waste operation and emergency response.

29 CFR 1910.1200, Hazard Communication, OSHA.

40 CFR 110, Discharge of Oil.

40 CFR 112, Oil Pollution Prevention.

40 CFR 113, Liability Limits for Small Onshore Storage Facilities.

40 CFR 435, Oil and Gas Extraction Point Source Category.

A-3. Unified Facilities Criteria.

UFC 3-600-01 Fire Protection Engineering for Facilities.

A-4. Unified Facilities Guide Specifications.

UFGS 48 13 19.00, *Turbine Oil*, May 2014, https://www.wbdg.org/ccb/DOD/UFGS/UFGS%2048%2006%2015.pdf.

UFGS 35 05 40.14, *Hydraulic Power Systems for Civil Works Structures*, May 2014, https://www.wbdg.org/ccb/DOD/UFGS/UFGS%2035%2005%2040.14%2010.pdf.

UFGS 35 05 40.17, *Self-Lubricated Materials, Fabrication, Handling, and Assembly*, May 2014, https://www.wbdg.org/ccb/DOD/UFGS/UFGS%2035%2005%2040.17.pdf.

A-5. Department of Defense.

MIL-STD-3004C w/Change 1, Department of Defense Standard Practice, "Quality Assurance/Surveillance for Fuels, Lubricants and Related Products." https://assist.dla.mil.

MIL-L-23398D, "Lubricant, Solid Film, Air-Cured, Corrosion Inhibiting, NATO CODE NUMBER S-749";.

MIL-PRF-46147D, "Lubricant, Solid Film, Air-Cured, Corrosion Inhibiting".

MIL-PRF-46010H, "Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting, NATO CODE - S-1738".

MIL-PRF-32073A. Hydraulic Fluid, BioBased. Performance Specification. 2007.

MIL-PRF-46170C. NATO Code No. H-544. *Hydraulic Fluid, Rust Inhibited, Fire Resistant, Synthetic Hydrocarbon Base*. Performance Specification. 19 Jan 2001. (Supersedes MIL-H-46170B.).

A-6. U.S. Department of Transportation.

Federal Motor Vehicle Safety Standard (FMVSS) No. 116, "Motor Vehicle Brake Fluids" (DOT 3) Title 49 of the United States Code, Chapter 301.

A-7. U.S. Environmental Protection Agency (USEPA).

Best Management Practices: Handbook for Hazardous Waste Containers; U.S. EPA Region 6, 1997.

EPA 540-K-09-001, Spill Prevention, Control, and Countermeasure (SPCC) Regulation /40CFR pat 112: A Facility Owner/Operator's Guide to Oil Pollution Prevention, June 2010.

EPA 560/6-82-002, Sections EG-9, ES-6, Guidelines and Support Documents for Environmental Effects Testing, Environmental Protection Agency, Washington, DC.

EPA 560/6-82-003, number CG-2000, Aerobic Aquatic Biodegradation, Environmental Protection Agency, Washington, DC.

EPA 800R-11-002, Environmentally Acceptable Lubricants, November 2011, USEPA, Washington, DC.

U.S. Environmental Protection Agency (USEPA). 2014. *National Pollutant Discharge Elimination System (NPDES) Small Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels Less than 79 Feet (sVGP)*. Fact Sheet. WAshignton, DC: USEPA, http://water.epa.gov/polwaste/npdes/vessels/upload/sVGP_fs_2014.pdf.

A-8. U.S. Bureau of Reclamation.

U.S. Bureau of Reclamation. October 2000. "Facilities, Instructions, Standards, and Techniques (FIST)," Vol 3-30, Transformer Maintenance, Denver, Colorado.

U.S. Bureau of Reclamation Mid-Pacific Regional Office. July 1997. "Folsom Dam Spillway Gate 3 Failure Investigation Trunnion Fixture Test," U.S. Bureau of Reclamation Mid-Pacific Regional Office, Sacramento, CA.

U.S. Bureau of Reclamation. July 2004. Facilities, Instructions, Standards, and Techniques (FIST), Vol 2-4, Lubrication of Power Plant Equipment, Denver, Colorado.

U.S. Bureau of Reclamation. January 2009. Facilities, Instructions, Standards, and Techniques (FIST), Vol 4-1A, Maintenance Scheduling for Mechanical Equipment, Denver, Colorado.

A-9. Coordinating European Council (CEC).

CEC-L-33-A-94, *Biodegradability Test Data*. Brussels, Belgium: Coordinating European Council (CEC).

CEC-L-33-A-93 (U), 12 December 1997, Biodegradability of Two-Stroke Cycle Outboard Engine Oils in Water (Archive Copy), CEC Code:, These publications are not supported by a CEC Working Group and will not be updated. Only limited copies of methods in paper format are available.

A-10. Organization for Economic Cooperation and Development (OECD).

Organization for Economic Cooperation and Development (OECD), OECD 203, 1993, *Guideline for Testing of Chemicals, Fish Acute Toxicity Test*, Organization for Economic Cooperation and Development, Paris, France.

Organization for Economic Cooperation and Development (OECD), OECD 301B, 1993, *Guideline for Testing of Chemicals, Ready Biodegradability: Modified Sturm Test*, Organization for Economic Cooperation and Development, Paris, France.

A-11. PIANC References.

Daniel 2011, Daniel, R. A. 2011. Contact behavior of lock gates and other hydraulic closures: Research results, investigations and field experiences. Saarbruecken: Lambert Academic Publishing.

PIANC Working Group 138 Report, Navigation Locks and Dams, Mechanical and Electrical Lessons Learned, 2012.

PIANC Workshop, Use of Synthetic Materials, R.A. Daniel and J. Augustijn, 2011.

Paulus 2014**,** Paulus, T.M 2014. Lock Machinery and Equipment Lubrication, Design Issues and Emerging Trends. In Proceedings, PIANC World Congress, San Francisco, June 3-5, 2014.

A-12. Industry Standards.

a. American Gear Manufacturers Association (AGMA).

ANSI/AGMA 1010, “Appearance of Gear Teeth – Terminology of Wear and Failure,” 2014.

ANSI/AGMA 9005-E02, “Industrial Gear Lubrication”.

AGMA 6013-A06, **“**Standard for Industrial Enclosed Gear Drives”.

AGMA 6113-A06, **“**Standard for Industrial Enclosed Gear Drives (Metric Edition)”.

b. American Society for Testing and Materials (ASTM).

STP1521, “Testing and Use of Environmentally Acceptable Lubricants,” 2012.

B117, “Standard Practice for Operating Salt Spray (Fog) Apparatus,” 2011.

D88, “Standard Test Method for Saybolt Viscosity,” 2013.

D91, “Test Method for Precipitation Number of Lubricating Oils,” 1997.

D92, “Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester,” 2015.

D93, “Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester,” 2015.

D95, “Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation,” 2013.

D 97, Standard Test Methods for Pour Point of Petroleum Oils, 2012.

D128, “Standard Test Methods for Analysis of Lubricating Grease,” 2014.

D130, “Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test,” 2012.

D189, “Standard Test Method for Conradson Carbon Residue of Petroleum Products,”2014.

D217, Standard Test Methods for Cone Penetration of Lubricating Grease, 2010.

D445, “Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic Viscosity),” 2012.

D482, “Standard Test Method for Ash from Petroleum Products,” 2011.

D524, “Standard Test Method for Ramsbottom Carbon Residue of Petroleum Products,” 2010.

D566, “Standard Test Method for Dropping Point of Lubricating Grease.”.

D611, “Standard Test Methods for Aniline Point and Mixed Aniline Point of Petroleum Products and Hydrocarbon Solvents,” 2012.

D664, “Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration,” 2011.

D665, “Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water,” 2012.

D874, “Standard Test Method for Sulfated Ash from Lubricating Oils and Additives,” 2013.

D877, “Standard Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes,” 2013.

D892, “Standard Test Method for Foaming Characteristics of Lubricating Oils,” 2013.

D893, “Standard Test Method for Insolubles in Used Lubricating Oils,” 2014.

D942, “Standard Test Method for Oxidation Stability of Lubricating Greases by the Oxygen Pressure Vessel Method,” 2007.

D943, Standard Test Method for Oxidation Characteristics of Inhibited Mineral Oils. 2004.11.01 (R 2010).

D971, “Standard Test Method for Interfacial Tension of Oil Against Water by the Ring Method,” 2012.

D972, Standard Test Method for Evaporation *Loss of Lubricating Greases and Oils*. 2002.04.10 (R 2008).

D974, “Standard Test Method for Acid and Base Number by Color-Indicator Titration,” 2012.

D976, “Standard Test Method for Calculated Cetane Index of Distillate Fuels,” 2011.

D1092, “Standard Test Method for Measuring Apparent Viscosity of Lubricating Greases.” 2012.

D1218, “Standard Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids,” 2012.

D1263, “Leakage Tendencies of Automotive Wheel Bearing Greases,” 2005 – withdrawn – no replacement

D1264, Standard Test Method for Determining the Water Washout Characteristics of Lubricating Greases, 2012.

D1401, “Standard Test Method for Water Separability of Petroleum Oils and Synthetic Fluids,” 2012.

D1403, Standard Test Method for Cone Penetration of Lubricating Grease Using One-Quarter and One-Half Scale Cone Equipment, 2010.

D1500, “Standard Test Method for ASTM Color of Petroleum Products (ASTM Color Scale),” 2012.

D1742, Standard Test Method for Oil Separation from Lubricating Grease During Storage, 2013.

D1743, Standard Test Method for Determining Corrosion Preventive Properties of Lubricating Greases, 2013.

D1744, "Standard Test Method for Determination of Water in Liquid Petroleum Products by Karl Fischer Reagent," 2013.

D1748, "Standard Test Method for Rust Protection by Metal Preservatives in the Humidity Cabinet," 2010.

Standard Test Method for Rust Protection by Metal Preservatives in the Humidity Cabinet.

D1831, "Standard Test Method for Roll Stability of Lubricating Grease," 2011.

ASTM D217 – 10, "Standard Test Methods for Cone Penetration of Lubricating Grease," 2010.

D2161, "Standard Practice for Conversion of Kinematic Viscosity to Saybolt Universal Viscosity or to Saybolt Furol Viscosity," 2010.

D2265, "Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range," 2006.

D2266, "Standard Test Method for Wear Preventive Characteristics of Lubricating Grease (Four-Ball Method)," 2008.

D2270, "Standard Practice for Calculating Viscosity Index from Kinematic Viscosity at 40 and 100°C," 2010.

D2272, "Standard Test Method for Oxidation Stability of Steam Turbine Oils by Rotating Pressure Vessel," 2011.

D2509, "Standard Test Method for Measurement of Load-Carrying Capacity of Lubricating Grease (Timken Method)," 2008.

D2595, Standard Test Method for Evaporation Loss of Lubricating Greases Over Wide Temperature Range, 2008.

D2596, Standard Test Method for Measurement of Extreme Pressure Properties of Lubricating Grease (Four-Ball Method), 2010.

D2665, "Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings," 2014.

D2711, "Standard Test Method for Demulsibility Characteristics of Lubricating Oils," 2011.

D2782, "Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)," 2014.

D2783, "Standard Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Four-Ball Method)," 2014.

D2893, Standard Test Method for Oxidation Characteristics of Extreme Pressure Lubrication Oils, 2014.

D3232, "Measurement of Consistency of Lubricating Greases at High Temperatures," 1994 – withdrawn – no replacement.

D3336, “Standard Test Method for Life of Lubricating Greases in Ball Bearings at Elevated Temperatures,” 2010.

D3427, “Standard Test Method for Air Release Properties of Petroleum Oils,” 2014.

D3487, “Standard Specification for Mineral Insulating Oil Used in Electrical Apparatus,” 2009.

ASTM D3705, “Standard Test Method for Misting Properties of Lubricating Fluids,” 2014.

D4048, Standard Test Method for Detection of Copper Corrosion from Lubricating Grease, 2010.

D4049, Standard Test Method for Determining the Resistance of Lubricating Grease to Water Spray, 2011.

D4057, “Standard Practice for Manual Sampling of Petroleum and Petroleum Products,” 2012.

D4059, “Standard Test Method for Analysis of Polychlorinated Biphenyls in Insulating Liquids by Gas Chromatography,” 2010.

D4170, “Standard Test Method for Fretting Wear Protection by Lubricating Greases,” 2010.

D4174, Standard Practice for Cleaning, Flushing, and Purification of Petroleum Fluid Hydraulic Systems, 2010.

D4378, “Standard Practice for In-Service Monitoring of Mineral Turbine Oils for Steam, Gas, and Combined Cycle Turbines,” 2013.

D4950, “Standard Classification and Specification for Automotive Service Greases,” 2014.

D5185, “Standard Test Method for Multi-element Determination of Used and Unused Lubricating Oils and Base Oils by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES),” 2013.

D5483, Oxidation Induction Time of Lubricating Greases by Pressure Differential Scanning Calorimetry (PDSC).

D5864, “Standard Test Method for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components,” 2011.

D6046, Standard Classification of Hydraulic Fluids for Environmental Impact, 2002.

D6081, “Standard Practice for Aquatic Toxicity Testing of Lubricants: Sample Preparation and Results Interpretation,” 2009.

D6139, “Standard Test Method for Determining the Aerobic Aquatic Biodegradation of Lubricants or Their Components Using the Gledhill Shake Flask,” 2011.

D6224, “Standard Practice for In-Service Monitoring of Lubricating Oil for Auxiliary Power Plant Equipment,” 2009**.**

D6304, “Standard Test Method for Determination of Water in Petroleum Products, Lubricating Oils, and Additives by Coulometric Karl Fischer Titration,” 2007**.**

D6439. “Standard Guide for Cleaning, Flushing, and Purification of Steam, Gas, and Hydroelectric Turbine Lubrication Systems,” 2011.

D6731, “Standard Test Method for Determining the Aerobic, Aquatic Biodegradability of Lubricants or Lubricant Components in a Closed Respirometer,” 2011.

D6973, “Standard Test Method for Indicating Wear Characteristics of Petroleum Hydraulic Fluids in a High Pressure Constant Volume Vane Pump,” 2014.

D7155, “Standard Practice for Evaluating Compatibility of Mixtures of Turbine Lubricating Oils,” 2011.

D7373, “Standard Test Method for Predicting Biodegradability of Lubricants Using a Biokinetic Model,” 2012.

D7578, “Standard Guide for Calibration Requirements for Elemental Analysis of Petroleum Products and Lubricants,” 2010.

E2412, “Standard Practice for Condition Monitoring of Used Lubricants by Trend Analysis Using Fourier Transform Infrared (FTIR) Spectrometry,” 2010.

F311, “Standard Practice for Processing Aerospace Liquid Samples for Particulate Contamination Analysis Using Membrane Filters,” 2013.

F312, “Standard Test Methods for Microscopical Sizing and Counting Particles from Aerospace Fluids on Membrane Filters,” 2008.

ASTM G99-05, “Standard Test Method for Wear Testing with a Pin-on-Disk Apparatus,” 2010.

c. Institute of Electrical and Electronics Engineers.

IEEE Std C57.104-2008, “IEEE Guide for the Interpretation of Gases Generated in Oil-Immersed Transformers”.

d. International Organization for Standardization (ISO).

ISO 12922, Lubricants, industrial oils and related products (class L) – Family H (Hydraulic systems) – Specifications for categories HFAE, HFAS, HFB, HFC, HFDR and HFDU, 2012.

ISO 15380, Lubricants, industrial oils and related products (class L) – Family H (Hydraulic systems) – Specifications for categories HETG, HEPG, HEES and HEPR, 2011.

ISO 3448, Industrial liquid lubricants – ISO viscosity classification, 1992.

ISO 3938, “Hydraulic Fluid Power-Contamination Analysis - Data-Reporting Method,” 1986.

ISO 16889:2008, Hydraulic fluid power - Filters - Multipass method for evaluating filtration performance of a filter element.

ISO 4406, 1999: Hydraulic fluid power – Fluids – Method for coding the level of contamination by solid particles.

e. National Fluid Power Association (NFPA).

NFPA 30 Flammable and Combustible Liquids Code, 2015.

f. Society of Automotive Engineers (SAE).

J517 Hydraulic Hose.

J1165, Reporting Cleanliness Levels of Hydraulic Fluids, May 2012 - Cancelled and superseded by ISO 4406.

J1703, "Motor Vehicle Brake Fluid," 2012.

J1704, "Borate Ester Based Brake Fluid," 2000.

J1707, "Service Maintenance of SAE J1703 and J1704 Brake Fluids in Motor Vehicle Brake Systems," 2011.

SAE-AMS-M-7866, Molybdenum Disulfide, Technical, Lubrication Grade.

SAE AS5528A, "Lubricant Application, Solid Film, Heat Cured, Corrosion Inhibiting".

A-13. Literature, Internet, and Textbook References.

American Society of Civil Engineers (ASCE), Water Control Gates, Guidelines for Inspection and Evaluation, 2012.

ASM 1998. **(**ASM International, formerly known as the American Society for Metals). 1998. Properties and selection of metals. In Metals handbook, Volume 1, 2d ed.

Black and Adams 1968, Black, P. H., and E. Adams Jr. 1968. Machine design, 3d ed. New York: McGraw Hill.

Oberg et al. 2012 Oberg, E., F. D. Jones, H. L. Horton, and H. H. Ryffel. 2012. *Machinery's Handbook*, 29th ed. New York: Industrial Press.

Shigley and Mischke 1989, Shigley, J. E., and C. R. Mischke. 1989. Mechanical engineering design, 5th ed. New York: McGraw Hill.

Cantley 1976. Cantey, Richard. 1976. "Effect of Water in Lubricating Oil on Bearing Fatigue Life." *ASLE Transactions* 20(3):244-248, http://www.pogc.com.au/blog/wp-content/uploads/2014/01/The-Efect-of-Water-in-Lubricating-Oil-on-Bearing-Fatigue-Life.pdf.

Carmichael 1950, Carmichael, C. 1950. Kent's mechanical engineers handbook, 12th ed., Design and Protection Volume. New York: John Wiley and Sons.

Oberg et al. 2008 Oberg, E., F. D. Jones, H. L. Horton, and H. H. Ryffel. 2012. Machinery's handbook, 29th ed. New York: Industrial Press.

American Society for Metals, 1993. ASM Handbook Volume 18, *Friction, Lubrication, and Wear Technology*, 1st ed., ASM International.

Avallone and Baumeister 1996. Avallone, E. A., and Baumeister III, T. 1996. *Marks' Standard Handbook for Mechanical Engineers*, 10th ed., McGraw Hill, New York, NY.

Errichello 1995, Errichello, R., and Muller, J. May/June 1991. *Ten Myths About Gear Lubrication*, Gear Technology, Vol. 12, No. 3, p 18.

Noria Corporation, *The Practical Handbook of Machinery Lubrication*, Robert Scott, Jim Fitch, and Lloyd Leugner, 4th ed., 2011.

Booser 1983, Booser, E. R. 1983. CRC Handbook of Lubrication (Theory and Practice of Tribology), Volume I, Application and Maintenance, CRC Press, Inc., Boca Raton, FL.

Booser1984, Booser, E. R. 1984. CRC Handbook of Lubrication (Theory and Practice of Tribology), Volume II, Theory and Design, CRC Press, Inc., Boca Raton, FL.

Booser 1994, Booser, E. R. 1994. CRC Handbook of Lubrication (Theory and Practice of Tribology), Volume III, Monitoring, Materials, Synthetic Lubricants, and Application, CRC Press, Inc., Boca Raton, FL.

Booser 1997, Booser, E. R. 1997. Tribology Data Handbook, Society of Tribologists and Lubrication Engineers.

Braithwaite 1964, Braithwaite, E. R., 1964, *Solid Lubricants and Surfaces*, 1st ed., Macmillan Company, New York, NY.

Bridon American. 1997. Technical Bulletin, *Rope Lubrication and Preservation in Service*, Bridon American, Wilkes-Barre, PA.

Fitch 1997, Fitch, J. C. 1997. *Strategic Elements of a Successful Oil Analysis Program*, Noria Corporation, Tulsa, OK.

Gulliver and Arndt 1991, Gulliver, J. S., and Arndt, R. E. A. 1991. *Hydropower Engineering Handbook*, 1st ed., McGraw Hill, Inc., New York, NY.

Kingsbury 2010**,** Kingsbury, Inc. 2010. A general guide to the principles, operations and troubleshooting of hydrodynamic bearings.

Lubrizol 1997, Lubrizol. 1997. *Grease Ready Reference*, Lubrizol Corporation, OH.

Mancuso and South 1994, Mancuso, J. R., and South, D. W. 1994. *Mechanical Power Transmission Components*, 1st ed., Marcel Dekker, Inc., New York, NY.

National Lubricating Grease Institute. Lubricating Grease Guide, 4th ed., National Lubricating Grease Institute, MO.

Neale 1995, Neale, M. J. 1995. The *Tribology Handbook*, 2d ed., Butterworth-Heinemann Ltd, Oxford, England.

Pall Industrial Hydraulics Company. 1997. *Contamination Control and Filtration Fundamentals*, Pall Corporation, Glen Cove, NY.

Parker Hannifin. 1997. *Industrial Hydraulic Technology*, 2d ed., Parker Hannifin Corporation, Cleveland, OH.

Williams 1994, Williams, J. A. 1994. *Engineering Tribology*, 1st ed., Oxford University Press, New York, NY.

WRTB 2005**,** Wire Rope Technical Board. 2005. Wire rope users manual, 4th ed.

Wills, G. 1980. *Lubrication Fundamentals*, Marcel Dekker, New York, pp 75-87.

A-14. Internet References.

American Petroleum Institute (API). Service Categories: API Engine Oil Service Categories, http://www.api.org/certification-programs/engine-oil-diesel-exhaust-fluid/service-categories.aspx

Knovel (online engineering database and search engine): http://why.knovel.com/.

Tribology-abc (online machinery and lubrication and bearing database and unit conversion calculator): http://www.tribology-abc.com/.

Whole Building Design Guide (online data base for industry specifications, guide specifications, and building materials): http://www.wbdg.org/.