

Calvin Ngo, Mechanical Engineer

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SUMMARY:

Innovative Mechanical Engineer with over 25 years of experience specializing in design and development across aerospace and satellite sectors. Proficient in CAD software such as NX and CATIA V5, with a proven track record of advanced system designs and optimization for key projects at organizations like Jet Propulsion Laboratory and Collins Aerospace. Successfully completed numerous projects including tooling and component designs that improved performance and reduced costs. Aiming to leverage expertise in mechanical system design to contribute to cutting-edge engineering solutions.

WORK EXPERIENCES:

04/2023 – 11/2024 **Mechanical System Designer/Drafter (Contractor/Remote).**

Commonwealth Fusion Systems. Burlington, Massachusetts.

- Contributed to the SPARC tokamak project focused on developing the Smallest Possible ARC (Affordable, Robust, Compact).
- Leveraged Computer NX software to produce diverse technical drawings essential for advancing robust manufacturing process technology concerning materials, part fabrication, and assembly. Streamlined the global process for fabrication quotes and facilitated input for new product quotes and configuration changes, emphasizing cost estimation and schedule coordination.

04/2022 – 03/2023 **Mechanical System Designer (Contractor).**

Jet Propulsion Laboratory. La Canada Flintridge, California.

- Supported the Mar Sample Return (MSR) program working on the Capture, Containment, and Return System project (CCRS).
- Engineered the End Effector Development Testbed (EDT)/End Effector Functional Testbed.
- Contributed significantly to Europa Clipper Satellite Project.
- Designed and released multiple drawings for Layer Insulation brackets.
- Formulated parts family drawing of O-ring thermal isolation.
- Redesigned, Revised and released varieties of fittings, brackets support, float plates, and retainers for the Purge Accommodation Launch Vehicle Adapter (LVA).
- Revised and released the Interface drawing of Reaction Wheel installation.
- Revised, redesigned and released series of Compensation Magnetic drawings.
- Executed the redesign and release of I-BEAM modification installation designs.
- Conceptual design of Tube Capture Device (TCD) solutions.
- Utilized NX 1953 and Team Center (EDPM) for all design tasks.

11/2018 – 04/2021 **Tool Designer (Contractor).**

Collins Aerospace. Chula Vista, California.

(Formerly UCT Aerospace Systems).

- Redesigned Assembly Jig (3ASMJ) Translating Sleeve Final Assembly.
- Designed Composite Bond Jig (COBJ) Inner Barrel Back Skin Splice Strips.

- Designed Bond Jig (COBJ) IFS Pre-Cured Doublers.
- Utilized CATIA V5 and PDM Team Center for model releases.

05/2018 – 02/2019 **Tool Designer (Contractor).**

Virgin Galactic. Long Beach, California.

- Designed composite layup tools for various rocket components including fuel tank, skirts, Fins and support brackets.
- Retrofitted tooling to integrate grounding hardware for instrumentations purposes.
- Developed shop aid tool for accurately locating and drilled features on the 2nd Stage Nozzle Ring.
- Designed a Handling Cart for rotating, pitching and transporting rocket tank assemblies while safeguarding the delicate outer surfaces from damage.
- Created innovative 3D printed shop aids such as a Ren Shape 5179 clamp assembly support.
- Designed a 3D printed shop aid drill plate spray template using ULTEM plastic with high stiffness properties.
- Designed and implemented DRLJ (Drill Jig) and INSL (Inspection Jig Block) for Upper/Lower Longeron, along with ASMJ (Assembly Jig) for the second stage assembly.
- Employed NX1953 and Team Center (EDPM) for releases and production.

06/2016 – 05/2018 **Mechanical System Designer (Contractor).**

Jet Propulsion Laboratory. La Canada Flintridge, California.

- Played a pivotal role in the SWOT Satellite – Surface Water and Ocean Topography, focusing on major primary and secondary component designs.
- Modified Satellite composite panels for KaRIN/NaDIR modules, re-engineered thermal pallet interfaces.
- Re-designed corner panel fittings and generated design specifications for SADC (Science Analog Digital Converter) wire harness interface trays.
- Designed various cable tray supports, including A-frame/cross bar cable brackets support and spar cable support structures, ensuring robust internal harness/waveguide brackets support.
- Designed A-bracket flex line support loop for heat pipe, including POST side mount waveguide supports as well as SHIM Iso-filter baseplate designs.
- Held accountability for the design and release of housing bearing rotor assembly and GYRO installation.
- Managed the release of composite panels for installation on KaRIN/NaDIR modules.
- Utilized NX1953 and Team Center (EDPM) for meticulous drawings released.

06/2005 – 06/2016 **Technologist Designer (L5).**

UTC Aerospace system. Chula Vista, California.

- Acted as the focal point for KC-390, 787, NEO-A320, A350-900/1000, GTF C-Series and MRJ.
- Designed crucial components including thrust reverser upper/lower hinge beams, translating sleeve, fan cowl, inlet, EBU system, drag links, fairing composite bond panel, actuators, engine mount, nozzle, exhaust systems.
- Responsibilities encompassed the design of detail parts, assemblies and installations for flight test instrumentation supporting fabrication, ME, QA and stress operations.

- Owned and managed various component designs on GTF-C-Series/MRJ, A350 XWB and 787 programs.
- Redesigned Translating Sleeve, Prepared presentation for Preliminary Design Reviews (PDR) and Critical Design Reviews (CDR).
- Designed secondary structure supports (brackets, drag link fitting, mounts), Latch/Keeper housing, and pressure relief Door assembly, Fan Cowl FWD/AFT hinges, generated components DMU (Digital Mock-Up) for clash check.
- Designed detail parts, assemblies and installation of ORSS/IRSS (Outboard/Inboard Rear Secondary Structure). Performed trade studies and design metallic & composite parts and assemblies on Primary and Secondary structures of beams, ribs, longerons, panels, fittings and Splices.
- Utilized CATIA V5 and Enovia.

06/2003 – 06/2005 **Tool Designer (Contractor).**
Northrop Grumman. El Segundo, California.

- Designed trim fixtures and composite bond tool for skin panels as well as monolithic graphite blocks for bond tool fabrication.
- Created jigs, fixtures, shop aids and detail tools aimed at securing parts during machining, assembly, welding, forming and inspection following established design practices.
- Employed reverse engineering techniques to generate solid models or parts where engineering drawings were not available.
- Utilized CATIA V5 along with META PHASE for comprehensive design tasks and released for production.

07/2002 – 05/2003 **Tool Designer (Contractor).**
Bell Textron. Dallas For Worth, Texas.

- Contributed to projects focused on AH-1Z/UH-1Y configurations.
- Redesigned Assembly Jigs, Drill Jigs, N/C mill fixture, Trim fixture to enhance efficiency and accuracy.

05/2001 – 03/2002 **Mechanical System Designer (Contractor).**
Jet Propulsion Laboratory. La Canada Flintridge, California..

- Engaged in the Mar Exploration Rover project, focusing on components related to the Rover Electronics Modules (REM assembly).
- Accountable for creating the layout for the struts support structure of the Rover Electronics Modules, alongside the routing of heat rejection system tubing and designing custom fittings and composite boron tubing for kinematics struts assembly.
- Utilized CADD5 for design tasks and released for production.

05/1997 – 09/1999 **Mechanical System Designer (Contractor).**
Northrop Grumman. El Segundo, California.

- Engaged in the design of the Kisler Launch Vehicle, focusing on Frame and Composite skin designs for the forward section of the launch assistant platform intended for reuseable rocket.
- Engineered composite center section skins and frames for the OV RP tank.
- Utilized UNIGHAPHIC II for all design efforts.

09/1996 – 04/1997 **Mechanical System Designer (Contractor).**
Hughes Space & Communication. El Segundo, California.

- Played a critical role in the ICO Satellite and Liquid Propulsion system, Contributing to the creation of layout support structure while redesigned propulsion composite panel.

09/1993 – 09/1996 **Fuel System Designer (Contractor).**

Mc Donnell Douglas Corp. Long Beach, California.

- Focused on the MD80/90, MD-11ER and Center Wing tank project.
- Engineered the fuel system module for the center wing tank to facilitate ventilation and main fuel system assembly.
- Utilized Unigraphics II to ensure precision in design implementations.

05/1991 – 09/1993 **Tool Designer (Contractor).**

Northrop Grumman. El Segundo, California.

- Contributed to the F18 E/F program focusing on Inlet Duct/ and Wing components tooling.
- Responsibilities included designing assembly Jigs, drill Jigs, handling/machining/turning fixtures, as well as weld adaptors to ensure quality production processes.
- Utilized Unigraphics II for all tooling design efforts.

02/1989 – 05/1991 **Tool Designer.**

Mc Donnell Douglas Corp. Long Beach, California.

- Focused on project related to C17, MD-11, MD-80/90 including cargo door, fuel tank tubing, and hydraulic tubing designs.
- Designed assembly weld fixtures and ATP (Auxiliary Tool Production) setups, contributing to major airframe assembly operations.

EDUCATION:

1986 – 1988 California State University, Long Beach, California
Mechanical Design Technology and Drafting courses

CERTIFICATION AND TRAININGS:

- NX 1953 (Siemens certificate June 2016), EDPM/PLM-Teamcenter.
- Nacelle Acoustic Training, UTC, August 23, 2013.
- Stress analysis (3D) Catia model messing for analysis stress model). UTC, June 30, 2011.
- Basic Composite Fiber shim course, UTC, June 26, 2009.
- GD&T Function Based Design for Producibility, Goodrich/A350 Team, November 05, 2008.
- Sheet metal and flat pattern design, McDonnell Douglas, Long Beach, California, 06/30/2000.

REFERENCES:

Work references at JPL (Pasadena)

1. Enrique Baez
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Work references at VO (Virgin Orbit) Long Beach

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