Cornerstone® VALVE

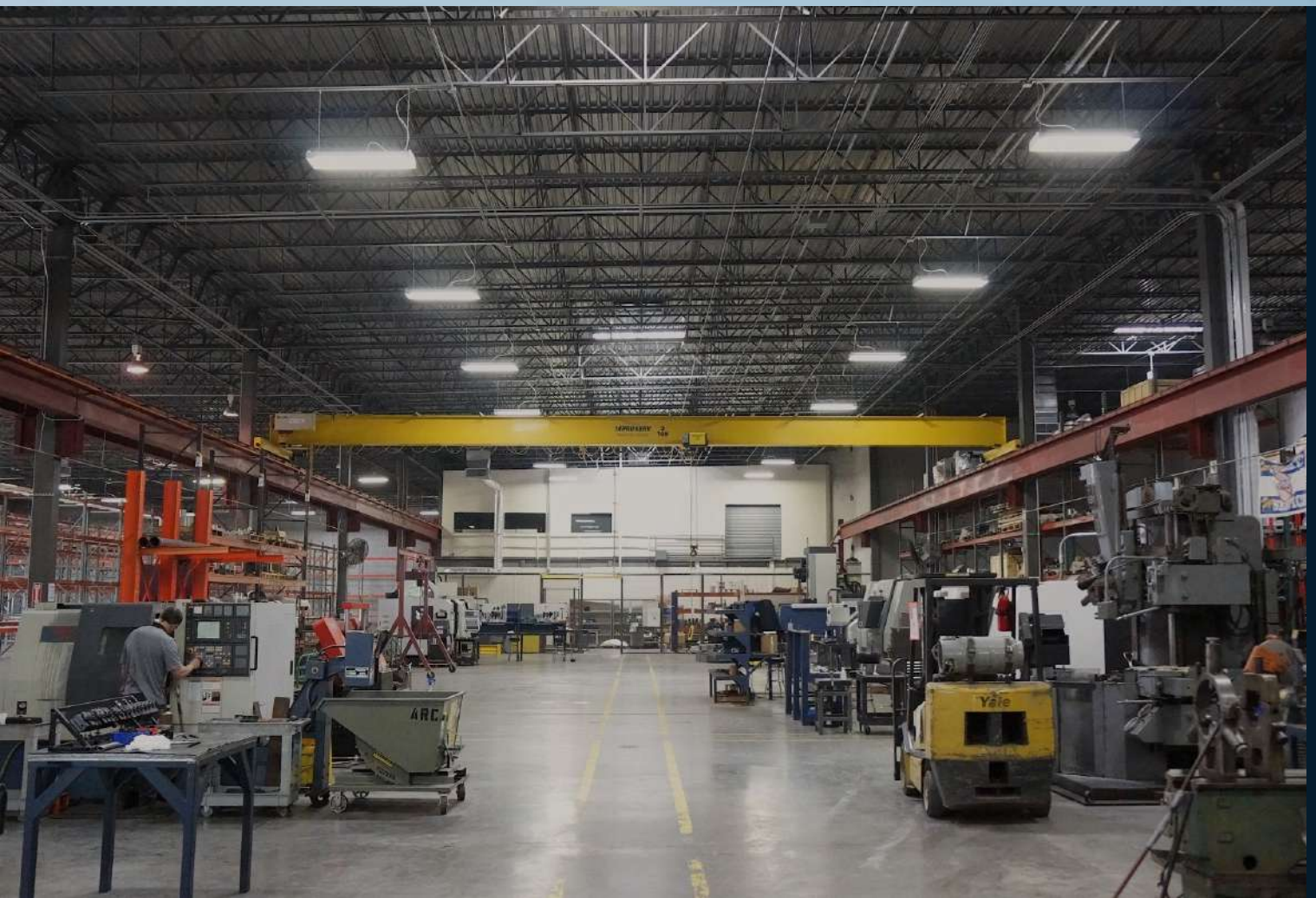
SEVERE SERVICE ENGINEERING



COMPANY OVERVIEW 2022

CORNERSTONE VALVE

SEVERE SERVICE ENGINEERING



FOUNDATION

Cornerstone Valve was founded in 1990 by Bob Davenport on core principles of providing custom engineered, fit-for-purpose Ball Valves, Rotary Control Valves and Check Valves as well as continuous investment in development of customer-driven solutions.

OVERVIEW



US Manufacturer

Cornerstone Valve is Woman Owned Privately held Company located in Missouri City, Tx with 30 years of continuous operation and a global reference list.

In-house Engineering
Design, Testing & Inspection

Licensed to Monogram
API 6D / 6DSS / 6A PSL 1, 2, 3, & 3G Certified

QMS Certified
to ISO 9001, API Q1

COMPANY VALUES



Our Mission

Become the “go-to” manufacturer for custom engineered, fit-for-purpose valves for severe service application while providing best value addition to our customers.

Our Vision

Stay true to our core expertise, nimble to market conditions by utilizing our 30 years of experience and deep understanding of huge spectrum of applications, metallurgical characteristics, supply chain reliability and tolerance stack-up.

Cornerstone® VALVE
SEVERE SERVICE ENGINEERING



OUR #1 PRIORITY IS TO CUSTOMER SUPPORT 24X7

QUALITY MANAGEMENT SYSTEM

Committed to maintaining a quality management system that provides:

- Continuous analysis for quality and process improvements.
- Emphasizing Defect Prevention.
- Compliance To Customer Requirements.
- Promoting employee awareness.
- Achieving customer satisfaction.

Process monitoring and measurement :

- Internal and external audits.
- Review Management.
- Customer surveys.
- Corrective/Preventive Action Program.



6D-0164
6DSS-0073
6A-0321 6A PSL 1, 2, 3, 3G

API Spec Q1 Registered

Q1-0165

THE CORNERSTONE ADVANTAGE



1. Made-to-order fit-for-purpose Custom Engineered Ball Valves, Check Valves & Rotary Control Valves for Severe Service Applications.
2. Metal / Soft seated Designs.
3. ISO 5208 Leakage Rate A (Zero Leakage) for Metal Seated Designs.
4. Unique Customer/Application focused Designs from ASME Class 150 to API Class 20,000.
5. Above market average On-Time-Delivery record.
6. Reliable G7 based Supply Chain.
7. Best product solution in the shortest possible lead times from white paper design to finished product.
8. User reference list allowing huge insight into behavior of wide spectrum of metallurgies in various applications.
9. Well maintained library of our legacy designs allows aftermarket support.

0 WHITE PAPER

WEEKS

PROCESS

16 COMPLETED CUSTOM VALVE

COMPANY TIMELINE

START



1990

Cornerstone Valve Was Founded.

Aerospace Work Begins.



1991

US Navy Works Begin,

First Oil & Gas Order Shipped.

1993

Obtained API 6D & API

6A PSL 1, 2, 3, 3G Licenses.

1994

First Subsea Valve

Manufactured.



COMPANY TIMELINE



1998

Metal Seated Valves For High Temperature Polypropylene Service Shipped.



1999

Top Entry Valves For HP Maleic Acid Service Shipped.



2000

ISO 9001 Obtained.
Launch Pad Valves For Nitrogen Service Shipped.



2001

High-Pressure Gas System Valves & Metal-Seated valves for Hot Gas At 700 °F shipped.



2003

First Major Deep Water Platform Topside Valves Shipped to Gulf of Mexico.

COMPANY TIMELINE

2004

API Q1 Obtained.



2013

Cornerstone Valve successfully acquires EII Valve Co. and relocates to 80,000sft temperature-controlled manufacturing facility in Stafford, Tx.

Eii Valve Co.



API Spec Q1 Registered

CRANE NUCLEAR

2011

Signs exclusive licensing agreement with Crane Nuclear to manufacture & sell Cornerstone's product line of top entry ball valves up to 36" to the nuclear power industry.



2016

Develops "silver bullet" valve for Chevron Gorgon Project Bi-Directional Cavity relieving Fugitive Emission (-)320 F to (+) 400F Floating Ball Valve; ONLY ONE OF A KIND.

COMPANY TIMELINE

2017

Obtained API 6DSS License; Only Second company in U.S.A. to have this license. Bags API 10k topside project on Leviathan project from Noble Energy.



2018

Develop API 10K Cryogenic Valve for SpaceX.

2019

Relocates to current location in Missouri City, Texas.





2020

Releases Gen2 Floating Configuration for power gen market.

OUR STORY CONTINUES



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

SEVERE SERVICE ENGINEERING

Extreme Sludge

After 2 Years Of Brutal Use, Cornerstone's Valves Are Still Working In A Paper Mill's Continuous Digester, Day In And Day Out.



Extreme Depth

Our Top-entry Subsea Valves Are Qualified To 10,000 Ft Water Depth. Working Day In And Day Out.



Extreme Hazard

SB-2 Workhorse Valves Still Operate Day In And Day Out - 8 Years After Replacing Brands That Cost A Company $5,000 A Week In Maintenance.





Extreme Savings

300 Miles Offshore, Every Ounce And Inch Make A Difference. Our Efficient Top-entry Valves With Integral Hub Ends Saved 100 Tons And Over $450K, While Working Day In And Day Out.

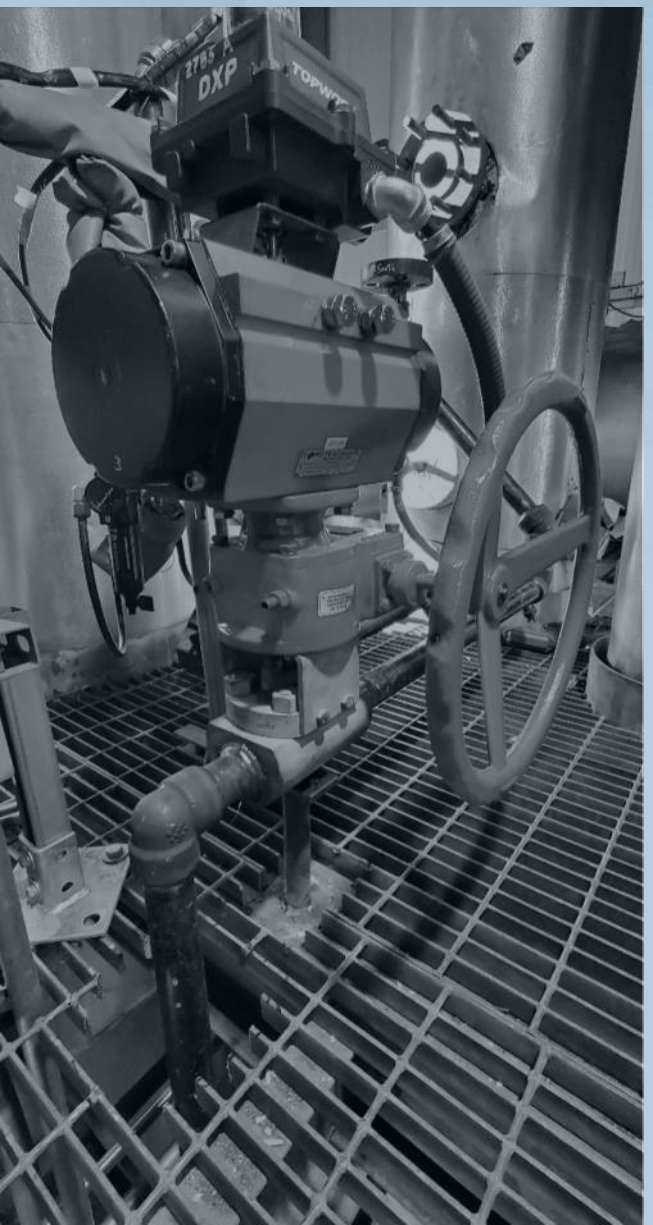


Extreme Media

Cornerstone Valves Used In An Iron Ore Processing Facility Have Had A Service Life For 20 Times Those Of Previous Valves. They Continue To Work, Day In And Day Out.



APPLICATIONS



Oil & Gas
Upstream

i. High Pressure to 20k psig
ii. Loaded fluids such as oil/gas with sand
iii. Sour service (H2S)
iv. Subsea, topside, platform valves
v. Deep water
vi. Corrosive services – high salt entrainment, well head fluids
vii. Fluid control ON-OFF and pressure control
viii. Pollution prevention (liquid, gas, noise)
ix. Blowdown
x. Gas/oil/liquids separation including gas fractions
xi. Cryogenics
xii. Wellhead's fluid injection

Oil & Midstream
Gas & Oil Processing

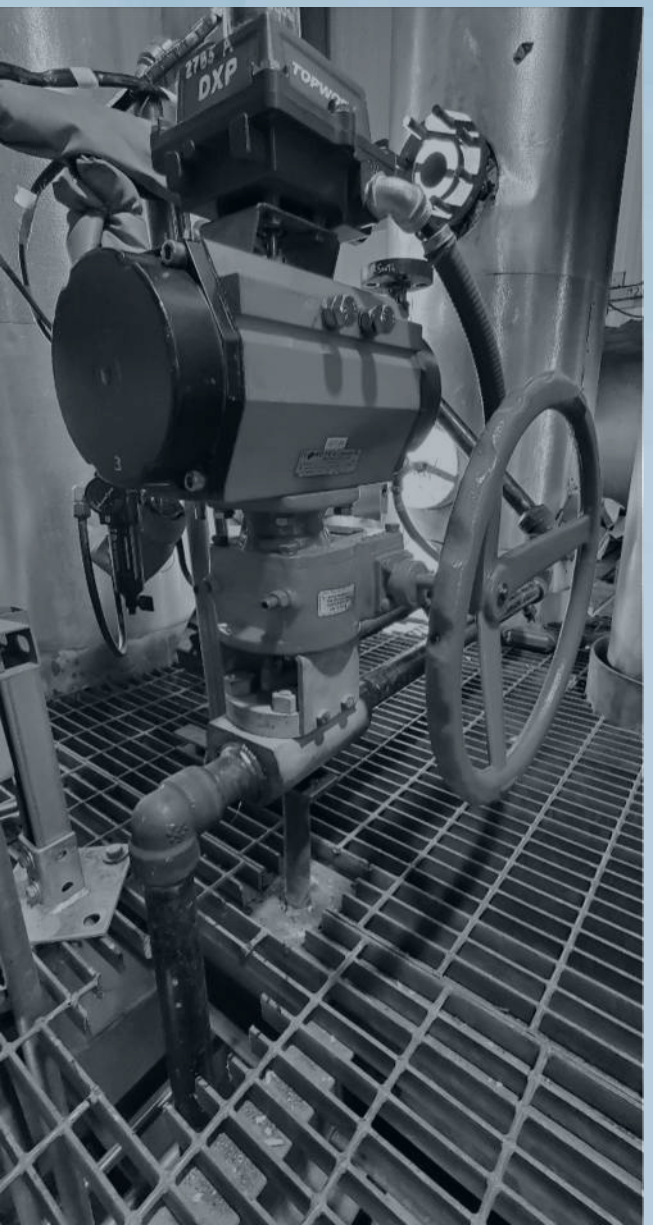
e.g., fire prevention and life safety

i. Plastics manufacturing and transport
ii. Fire safety assurance and testing
iii. Gas dehydration switching
iv. Anhydrous ammonia pipeline
v. Fractionator bottoms pump isolation
vi. Gas off and gas to flare
vii. High pressure H-Oil and H2 injection up to 950F and 2900psig
viii. High temp catalyst switching (refining, disposal)
ix. Reforming switching valves (H2 + AlO2 at 850F)
x. Heavy crude systems with related processes including delayed cokers and flexicoking
xi. Furnace isolation
xii. Ship loading/unloading
xiii. Salt dome caverns – brackish water, gas storage
xiv. Gas-to-oil process valves
xv. Pipeline ON-OFF and blowdown
xvi. Compressor recycle and surge control
xvii. High cycle product letdown

Ore Handling
& Processing

i. Processing Iron Ore 1250F in H2 atmosphere
ii. Copper ore transport – slurry pipeline
iii. Pressure reducing stations – orifice plate isolation
iv. Coal slurry pipeline
v. Separators
vi. Lock-hopper inlet and outlet valves
vii. Coal gasification
viii. Oil shale retorting

APPLICATIONS



Pulp & Paper

i. Virtually all valves used in both continuous and batch digesters
ii. Pulp stock, steam, black liquor, sand separators, 2-way and 3-way
iii. Batch digester inlet valves for batch automation
iv. Blow-down valves for both batch and continuous digesters
v. Steam control and condensate control
vi. Gas off
vii. Steam and paper machine head-box control

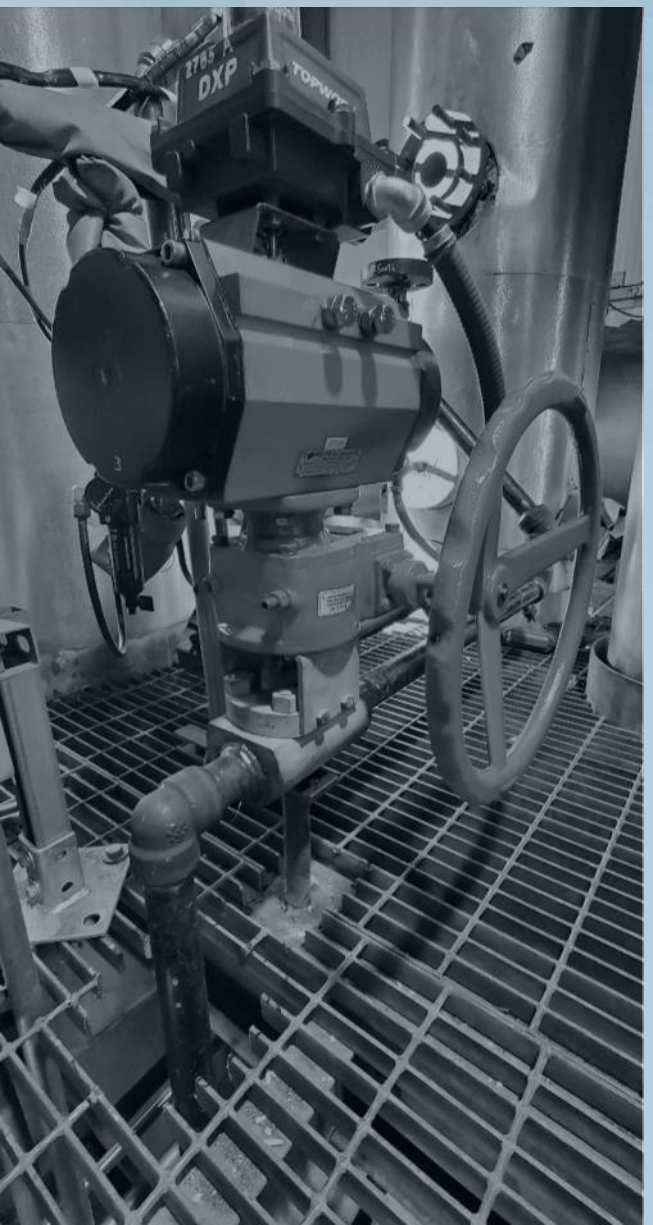
Maritime

i. Ship loading control valves
ii. Special products handling such as LNG
iii. Steam and condensate

Space Launch Facilities

i. Quick opening valves for energizing systems to protect from Blast and vibration – sole-sourced since 1989
ii. Aircraft launch steam control systems

APPLICATIONS



Power

i. Top entry in-line serviceable for high pressure
ii. Steam, condensate
iii. Hydroelectric turbine block and control
iv. Gas yard control valves
v. Nuclear, fossil/natural gas-fired systems

US Defense
(Navy, DLA, AFB)

i. Improvement in Navy standard designs
ii. Special flow control technology
iii. ROM desalination control valves
iv. Quite Valve technology

CURRENT APPROVALS



BHP





ConocoPhillips

































PARTIAL LIST

FOCUSED ON SAFETY

- As engineers and specifiers, you must do your best to assure that what is installed ensures life, safety and performance!
- Remember! Your decisions really make a difference! We need to require suppliers to do 100% material documentation and testing.





- Start at the specification stage! Ensure that industry standards are followed.
- Subsea intervention costs are very high, far exceeding any "cost savings" that can be offered!

LICENSES & CERTIFICATES

- U.S. manufacturer of API 6A, 6D 6DSS, B16.34, ASME Boiler Code valves (and combinations thereof).
- Serving the oil and gas markets (Upstream, Midstream and Downstream) Mining, Energy, Pipeline, Refining, Underwater and Cryogenic Applications.
- Multiple successful API 607/6FA fire tests in proprietary designs.
- Successful fugitive emission type tests in accordance with ISO 15848-1.



ABS Quality Evaluations

Certificate Of Conformance

This is to certify that the Quality Management System of

Cornerstone Valve

1535 Industrial Drive
Missouri City, TX 77489
U.S.A.

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:

ISO 9001:2015

The Quality Management System is applicable to:

DESIGN AND MANUFACTURE OF SEVERE SERVICE VALVES.

This certificate may be found on the ABS QE Website (www.abs-qe.com). For certificates issued in the People's Republic of China information may also be verified on the CNCA website (www.cnca.gov.cn).

Certificate No: 03974
Effective Date: 04 February 2022
Expiration Date: 03 February 2025
Revision Date: 04 February 2022

Dominic Townsend, President

ANAB IAF

Validity of this certificate is based on the successful completion of the periodic surveillance audits of the management system defined by the above scope and is contingent upon prior written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or components thereof.

ABS Quality Evaluations, Inc. 1701 City Plaza Drive, Spring, TX 77389, U.S.A.
Validity of this certificate may be confirmed at www.abs-qe.com/cert_validation.

Copyright 2011-2022 ABS Quality Evaluations, Inc. All rights reserved.



Certificate of Authority to use the Official API Monogram

License Number: 6D-0164 ORIGINAL

The American Petroleum Institute hereby grants to

CORNERSTONE VALVE
1535 Industrial Drive
Missouri City, TX
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6D-0164**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Ball Valves, Gate Valves

American Petroleum Institute

CORPORATE SEAL

2019-151 | Digital

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: JANUARY 19, 2022
Expiration Date: JANUARY 19, 2025

To verify the authenticity of this license, go to www.api.org/compositelist.

Senior Vice President of Global Industry Services



Certificate of Authority to use the Official API Monogram

License Number: 6DSS-0073 ORIGINAL

The American Petroleum Institute hereby grants to

CORNERSTONE VALVE
1535 Industrial Drive
Missouri City, TX
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6DSS** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6DSS-0073**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Subsea Ball Valves

American Petroleum Institute

CORPORATE SEAL

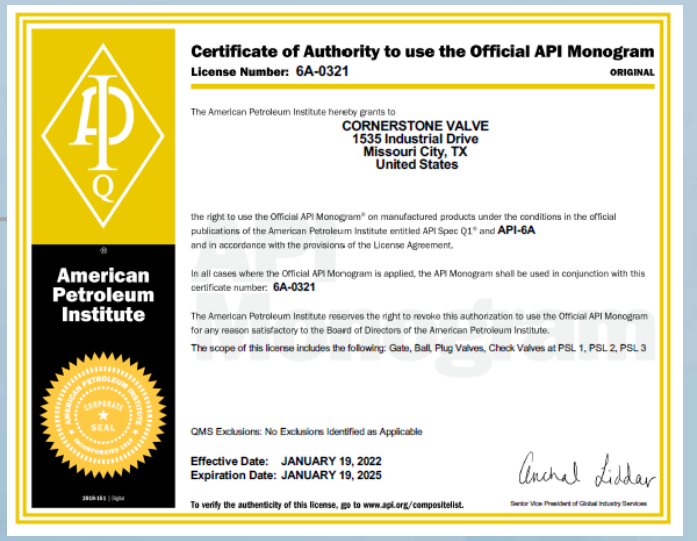
2019-151 | Digital

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: JANUARY 19, 2022
Expiration Date: JANUARY 19, 2025

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Senior Vice President of Global Industry Services



Certificate of Authority to use the Official API Monogram

License Number: 6A-0321 ORIGINAL

The American Petroleum Institute hereby grants to

CORNERSTONE VALVE
1535 Industrial Drive
Missouri City, TX
United States

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API-6A** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram shall be used in conjunction with this certificate number: **6A-0321**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

The scope of this license includes the following: Gate, Ball, Plug Valves, Check Valves at PSL 1, PSL 2, PSL 3

American Petroleum Institute

CORPORATE SEAL

2019-151 | Digital

QMS Exclusions: No Exclusions Identified as Applicable

Effective Date: JANUARY 19, 2022
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Senior Vice President of Global Industry Services

LICENSES & CERTIFICATES

NOFORN
And Level One
Cleared Facility

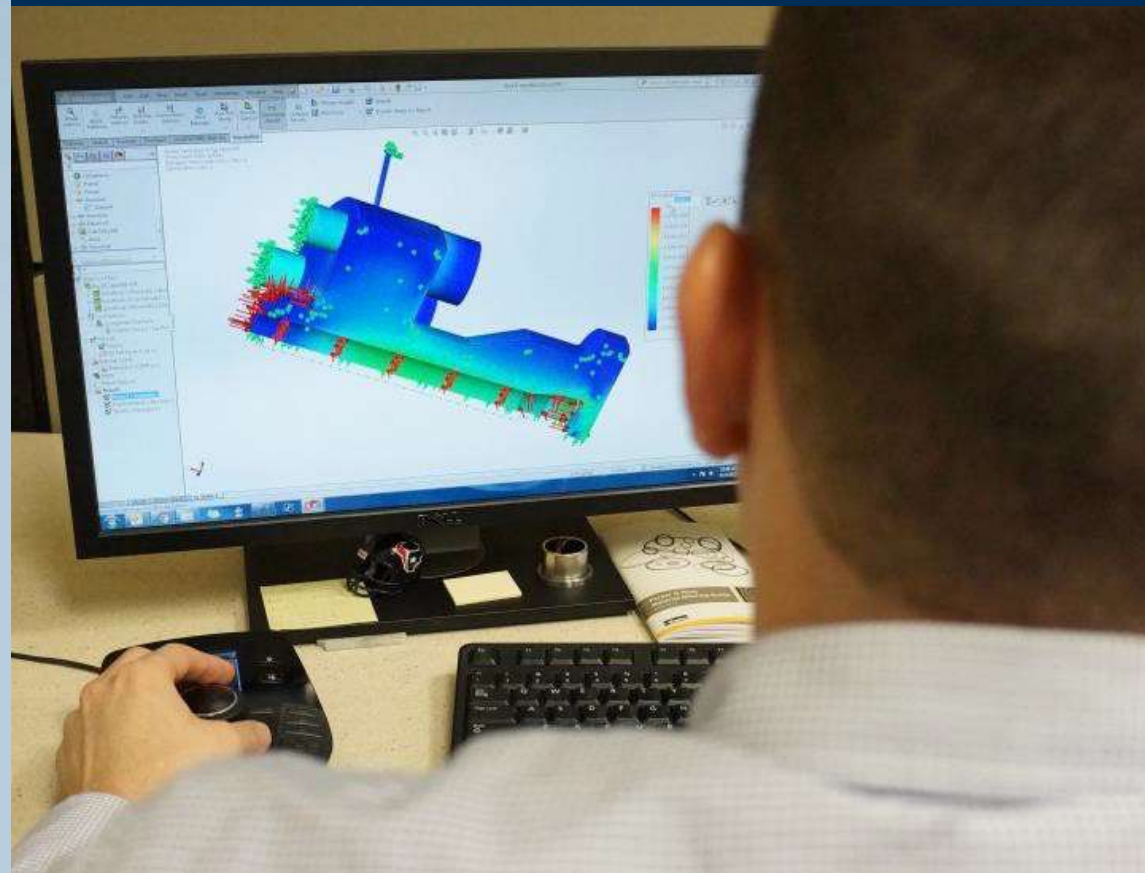
U.S. Small Business Administration
WOSB CERTIFIED

NMSDC
MBE Certified

Hire Houston First
Local Business

OUR TECHNOLOGY

- Subsea design experience at 10,000 feet depth of water.
- High pressure design (API6A) and experience at 15,000 psig.
    - ♦ Liquid & Gas Zero Leakage
    - ♦ Subsea, Onshore, Offshore, & Aerospace
- High-temperature design and experience to 1,600º F
- Low-temperature design and experience to -320º F
- Abrasive service – "Solids Proof"
- Power and Refinery Valves
- Rotary ball control technology
    - ► Trim for D-Ball
    - ► Multistage Slot Trim (developed for the U.S. Navy.)
    - ► Noise reduction



ENGINEERING METHODOLOGY



Specify

Specify and configure both valve experience and material science

Apply

Apply Materials & Components

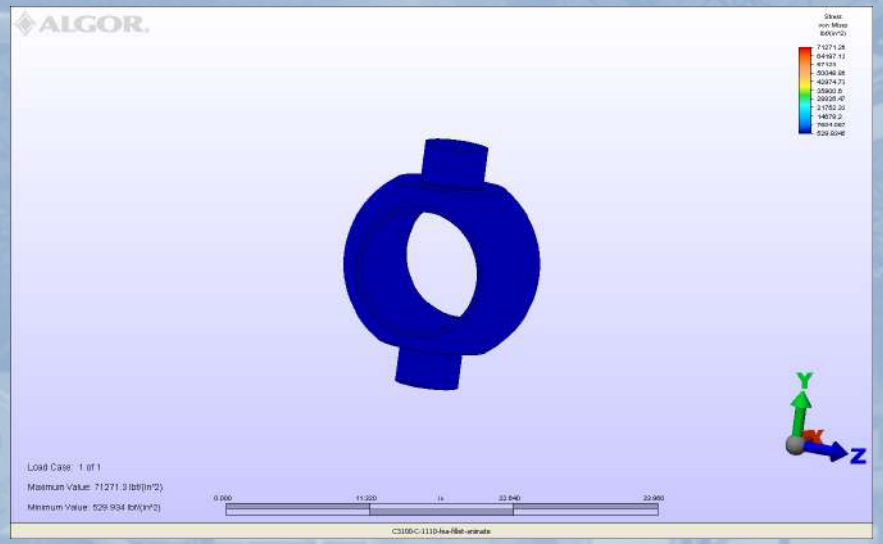
Math Cad

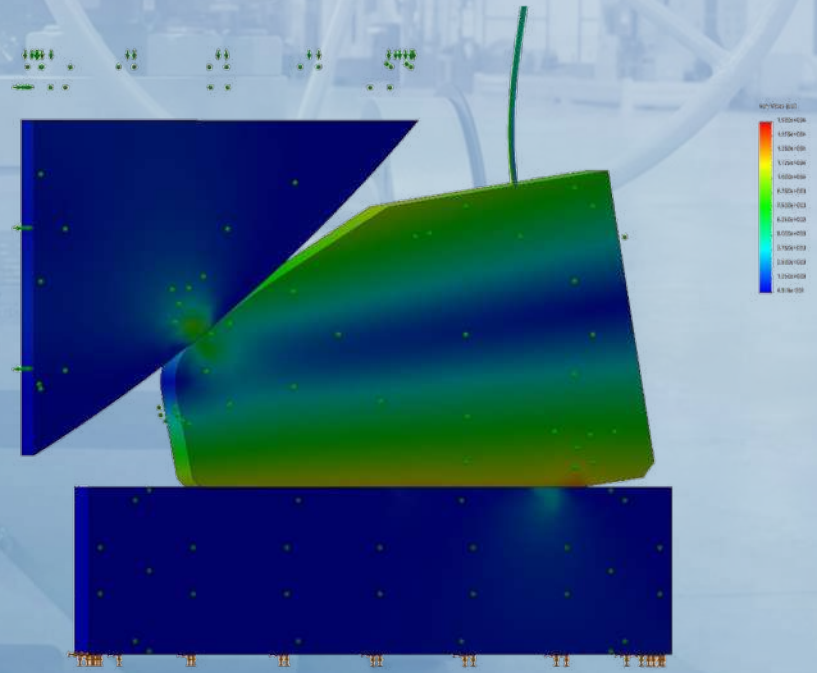
Math Cad to Applicable Codes / B16.34 / ASME Boiler Vessel Code Section VIII, div.

Simulation

FINITE ELEMENT ANALYSYS (F.E.A.)

- Valve Bodies and Bonnets
- Ball Spheres & Stems
- Seats and Trim Components





We use Solid-Works F.E.A as a tool to develop the design and analysis of each pressure component that contains/control our valves to API, ASME and other codes to ensure the performance and reliability of structural integrity.

CORNERSTONE VALVE

SEVERE SERVICE ENGINEERING



PRODUCT EXPERIENCE

3 decades have allowed us to develop products from white paper design that are unique, and application focused.

Metal seated – zero leakage designs stand out with best value addition for our esteemed customer base.

Our Valves Work!

EE/ES SERIES

End Entry Ball Valve

- 2 and 3 Pc Design, Bolted Body, Forged Materials
- Trunnion Mounted, Bi-Directional Shut-off
- Sizes: 1” –48”, Full or Reduced Bore
- Pressure Class:
  ANSI B16.34, API 6D –Class 150 to 4500
  API 6A –2,000 to 15,000 PSIG
- Rigid Ball, Stem & Trunnion Design
- DBB / DIB, Soft Seats or Metal Seat Option for Zero Leakage
- Temperature: -50 Deg. F to +1500 Deg F (High-Temp)



TE-1 SERIES

Top Entry Ball Valve

- 1 Piece, Forged Body Design
- Trunnion Mounted, Bi-Directional Shut-off
- Sizes:
  1.5” to 26”, True Full Bore or Reduced Bore
- Pressure Class:
  ANSI B16.34, API 6D Class 150 to 4500
  API 6A - 2,000 to 15,000 psig
- Single Piece Ball/Stem/Trunnion
- Top Entry, In-Line Repairable
- DBB / DIB, Soft Seats or Metal Seat Option for Zero Leakage
- Temperature: -50 F to 1500 F (Hi-Temp)



TE-3 SERIES

Top Entry Ball Valve

- 3 Piece, ForgedBody, Trunnion Mounted, Bi-Directional Shut-off
- Sizes: ½” to 26” –Full or Reduced Bore
- Pressure Class:
  ANSI B16.34, API 6D –150 to4500
  API 6A –2,000 to 15,000
- Top Entry,Single PieceBall/Stem/Trunnion
- DBB / DIB, Soft Seats or Metal Seat Option for Zero Leakage



Subsea Ball Valve

- 2 and 3 Pc Design, Bolted Body, Forged Materials
- Trunnion Mounted, Bi-Directional Shut-off
- Sizes: 1” – 48”, Full or Reduced Bore
- Pressure Class:
  API 6DSS –Class 150 to 2500
  API 17D –5,000 to 15,000 PSIG
- Rigid Ball, Stem & Trunnion Design
- DBB / DIB, Soft Seats or Metal Seat Option for Zero Leakage
- Water Depths to 10,000ft
- Hyperbaric Tested to 11,000ft



TP-1 SERIES

Trunnion Power Ball Valve

- 1 Pc Body Design, Top Entry, In-Line Repairable
- Metal seated, Single or Double Seated
- Sizes: 5/8" to 4“
- Pressure Class: ANSI 600 to 4500
- Temperature: -50º F to +1,200º F
- Metallurgy, End Connections & Actuation to customer specifications
- Leakage Class to customer specification
- Zero leakage available



TE-4 SERIES

Top Entry Floating Ball Valve

- In-Line Repairable, Top-Entry, Floating
- Metal-Seated, Compact Modular Design
- Sizes: ½” – 4” Full or Reduced
- Pressure Class
  ANSI B16.34, API 6D – Class 150 to 4500
  API 6A – 2,000 to 15,000 PSIG
- GEN2 Features ~70% weight reduction, torque reductions, and standardized repair kits; inventory friendly for quick turns and standardization
- First Cornerstone Power Valve to offer standard 60 MONTH ZERO LEAKGE WARRANTY (certain terms and conditions apply)
- Bore With Custom Sizes Available



FBC SERIES

Cryogenic Ball Valve

- 2 and 3 Pc Design, Bolted Body, Forged Materials
- Trunnion Mounted, Bi-Directional Shut-off
- Sizes: 1” –48”, Full or Reduced Bore
- Pressure Class:
  ANSI B16.34, API 6D –Class 150 to 4500
  API 6A –2,000 to 15,000 PSIG
- Temperature:
  -50 Deg. F to +1500 Deg F (High-Temp)
- Rigid Ball, Stem & Trunnion Design
- DBB / DIB, Soft Seats or Metal Seat Option for Zero Leakage



SB2 SERIES

Split Body Trunnion Ball

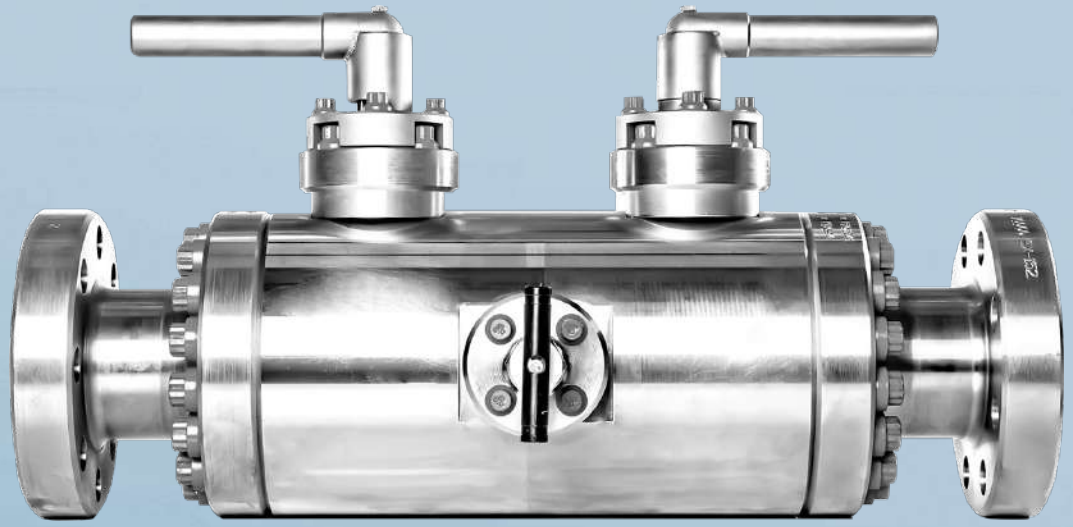
- 2 pc Forged Body
- Sizes: 1” to 32”, Full and Reduced Bore
- Pressure Class: ANSI Class 150 – 1500
- End Connections:
  RF / RTJ / Weld Ends / Hub Ends / Special
- Trunnion Mounted, Bi-Directional Shut-off
- Leakage Class – Bubble Tight (Soft Seated)
  ANSI/FCI 70.2 – Class V & VI (Metal Seated)
  ANSI B16.34 & API 598
- Temperature: -50 Deg. F to +1600 Deg. F (High Temp)



BNB SERIES

Ball Needle Ball Valves

- 1 Piece Forged Body
- Pressure Class:
  ANSI B16.34, API 6D – 150 to 4500
  API 6A – 2,000 to 15,000
- Double Block & Bleed Application
- Sizes: 1” – 24”
- Side Entry & Top Entry Designs
- Industries Served:
  – Refinery; Chemical & Petro- chemical; Oil & Gas
  – Subsea to Pipeline; LNG/Cryogenic



D-BALL SERIES

Rotary Control Valve

- Sizes: 1.5” to 12”
- Pressure Class:
  ANSI B16.34, API 6D – 150 to 4500
  API 6A – 2,000 to 15,000
- High rangeability - max Cv / min Cv
- Space – typically smaller space than globe
- Ease of automation
- Tight shutoff (typically ANSI/FCI CL V or VI)
- Uni-directional sealing-Upstream!
- In-line serviceable
- Noise Reducing



CORNERSTONE VALVE

SEVERE SERVICE ENGINEERING



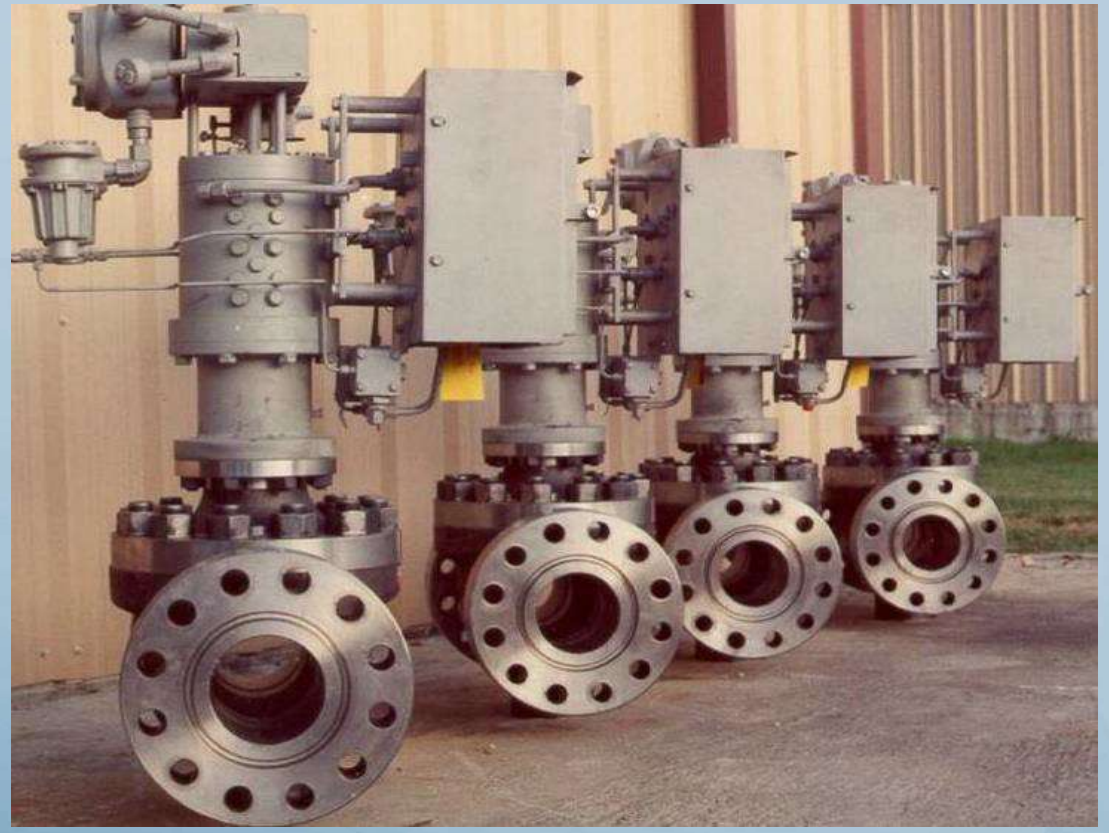
PAST EXPERIENCE

Clients in the past have placed orders on us due to multiple differentiators – Quick delivery, “Made in USA” product, bubble tight leakage metal seated valves, unique features not available in the market, HP-HT application, comply with non-standard dimensions, etc. Not only we have executed these orders every time but also gone out of our way to ensure customer satisfaction! Customer focus has kept us in the market thru thick and thin.

Severe Service Aerospace

TE1 - 6” - 1500

- 3,000 psig N2 Service
- 36 installed on Launch Pads
- Each opens in 0.016 seconds under full differential pressure
- [limit switch-limit switch]



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

Severe Service API17D Subsea

Bluewater Project

- API 17D, 2-1/16” 10K Top Entry Ball
- ROV Operated Actuation for Subsea





Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

High-Cycle Isolation

For LNG

- Rising demand for gas processing has led to higher volume at LNG and FLNG facilities. New operations expect more from valve functionality in the field.
- Why robust designs?
  - Longevity of service
  - Reduce maintenance cost/downtime
  - Safety
  - Versatility of operation--same valve can be used for multiple temperature ranges



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

Petrochemical Industry

Polypropylene Service (1022 °F)

- Cornerstone's model SB-2 valves have been in continuous service at this facility, without issue, for 20 years!



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

Refining Industry

FCC Catalyst Switching Application (1472 °F)

- PEMEX's Cadereyta Refinery contacted Cornerstone Valve to produce custom valves for an FCC catalyst fines separator system—a highly corrosive, high temperature service.

- Third-stage catalyst fines particles are extremely fine, each particle being 1/5th the diameter of a particle of baking flour—an extremely toxic inhalant remain trouble-free.



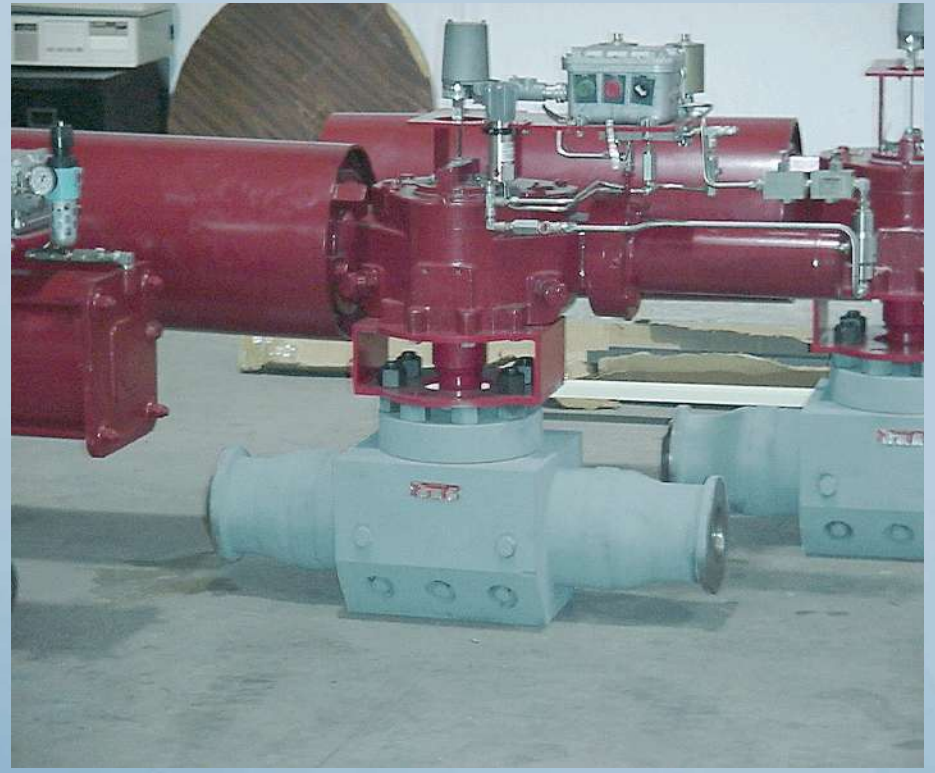
Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

O&G Production Industry

Natural Gas Injection Service (250°F)

In a major oil field in Boquerón, Venezuela, ARCO/BP needed to maintain field production pressures by compressing and re-injecting natural gas.

Cornerstone was called upon to supply the high pressure (API 10K) hub-end ball valves in several sizes. After several years of operation, a number of other brands of valves developed multiple seal failures causing both leak-through (internal) and external leaks. But not Cornerstone's!



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

API 6D Subsea

BHP Shenzi

- Skid Used On Devil's Tower Top Entry Riser
- Isolation Shutoff 12" 1500… Zero Leak Ball



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

Atlantis

British Petroleum

- Main Export Valve on BP Atlantis
- 170K Barrels/Day Crude Oil
- 24” 1500 ZERO LEAK



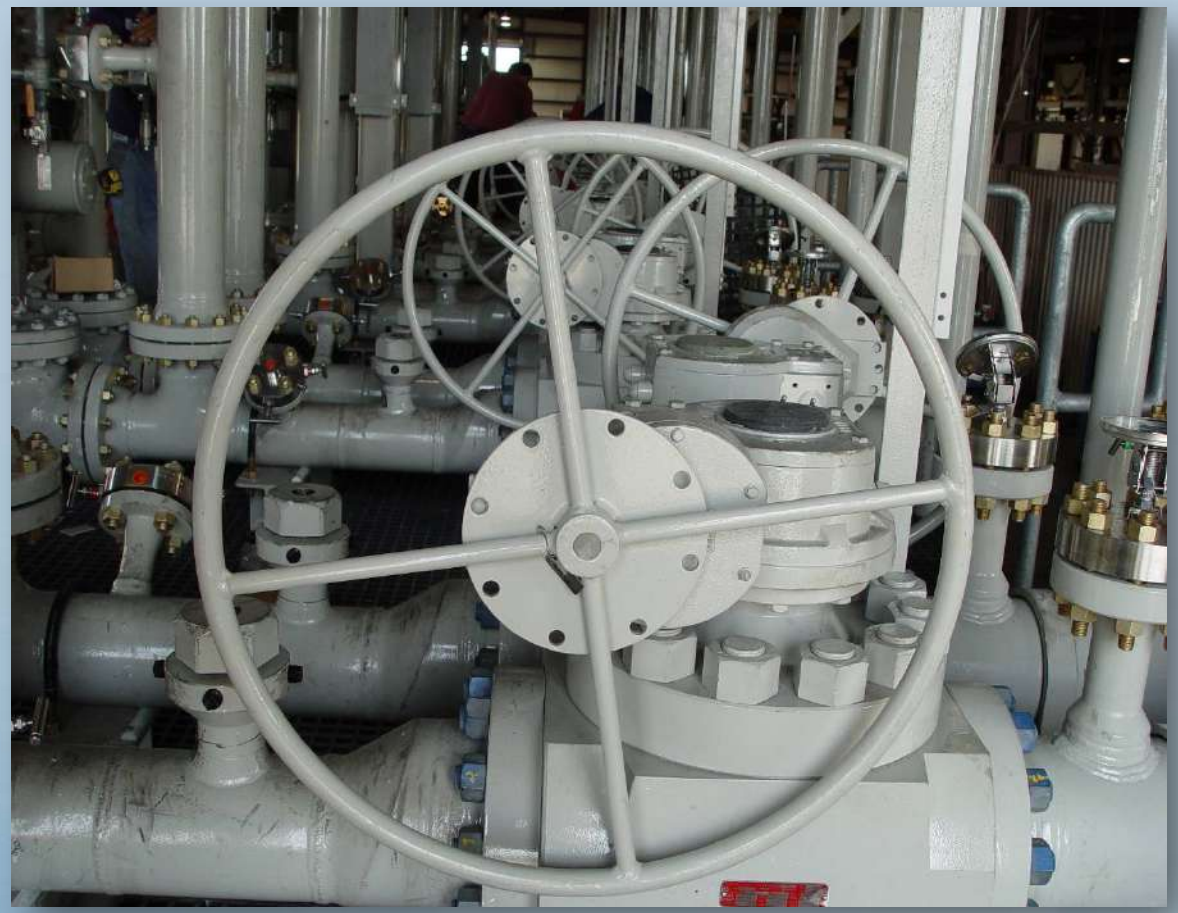


Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

Mad Dog

British Petroleum

- 8” API 10,000 BALL VALVE



Cornerstone® VALVE
SEVERE SERVICE ENGINEERING

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