

API 7-1 DRILL COLLAR SHIPMENT QUALITY REPORT

4145H Drill Collar Delivery to Onne Port, Nigeria

This report provides a data-first release review of the drill collar shipment in accordance with API 7-1, covering material control, dimensional inspection, connection protection and shipment traceability.



PRODUCT

API 7-1 Drill Collar



MATERIAL

AISI 4145H Modified alloy steel
or approved equivalent



HEAT TREATMENT

Quenched and tempered



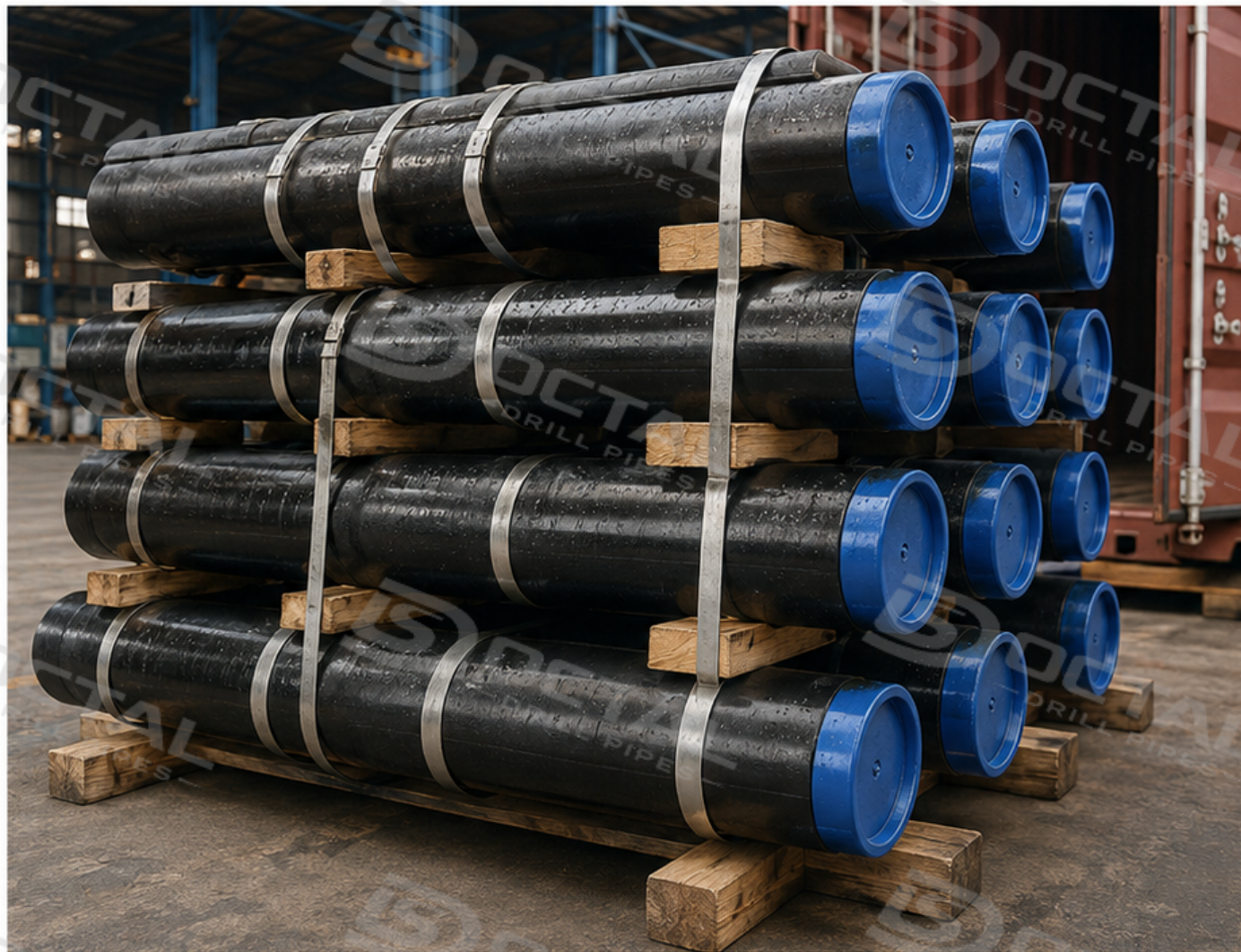
DESTINATION PORT

Onne Port, Nigeria



APPLICATION

Bottom Hole Assembly /
Weight on Bit / Drilling Stability



02 PROJECT SHIPMENT DETAILS

Controlled delivery information for API 7-1 drill collar shipment

This shipment was reviewed and released as finished BHA components—specifically drill collars manufactured to API Spec 7-1—rather than as ordinary alloy steel bars. All quality controls focused on ensuring drilling performance, connection integrity, dimensional accuracy and complete traceability from raw material to final loading.



QUALITY ASSURANCE FOCUS

Every drill collar in this shipment was controlled to API 7-1 requirements, with emphasis on material traceability, mechanical performance, connection integrity, dimensional conformance and secure, damage-free delivery.

ITEM	DETAILS
Destination	Nigeria
Destination Port	Onne Port, Nigeria
Product	API 7-1 Drill Collar
Product Type	Slick / spiral / project-specified drill collar
Standard	API Spec 7-1
Material	AISI 4145H Modified alloy steel or approved equivalent
Heat Treatment	Quenched and tempered
Connection	As per approved purchase order
Size Range	As per approved purchase order
Application	Bottom hole assembly, weight on bit and drilling stability
Release Focus	Material traceability, hardness, connection inspection, dimensional review and packing control
Document Package	MTC, heat-treatment record, dimensional report, hardness record, NDT / MPI record when required, connection inspection record, packing list and loading photos

Position, mechanical role and operational value in the bottom hole assembly

Drill collars are heavy-wall tubulars positioned directly above the bit in the bottom hole assembly.

They provide concentrated weight, increased stiffness, and stable energy transfer for efficient and controlled drilling.



Drill collars are critical components of the bottom hole assembly. Their heavy-wall construction adds mass near the bit to increase weight on bit, improves BHA stiffness, transfers torque effectively and enhances overall drilling stability.

BHA Function	Practical Meaning
Weight on Bit	Provides concentrated mass near the bit for controlled drilling force
High Rigidity	Improves bottom-hole assembly stiffness and directional stability
Torque Transfer	Transmits rotary torque through robust rotary-shouldered connections
BHA Stability	Helps stabilize the assembly and reduce erratic downhole motion
Vibration Control	Helps reduce unstable bit movement and drilling vibration exposure



04 MATERIAL AND HEAT TREATMENT REVIEW

4145H modified alloy steel identity, quench-and-temper control and hardness review

REVIEW ITEM	WHAT TO CONFIRM	WHY IT MATTERS
Material Grade	4145H Modified or approved equivalent	Confirms correct alloy steel route
Heat Number	Matches MTC and product marking	Supports raw material traceability
Heat Treatment	Quenched and tempered condition	Controls strength and hardness consistency
Chemical Composition	Recorded in MTC	Confirms alloy content and material identity
Mechanical Properties	Per standard and purchase order	Supports load-bearing review
Hardness	Within approved range	Helps reduce cracking or premature wear risk
Surface Condition	Free from harmful visible defects	Supports final machining and field acceptance



Controlled furnace processing for consistent quench-and-temper results

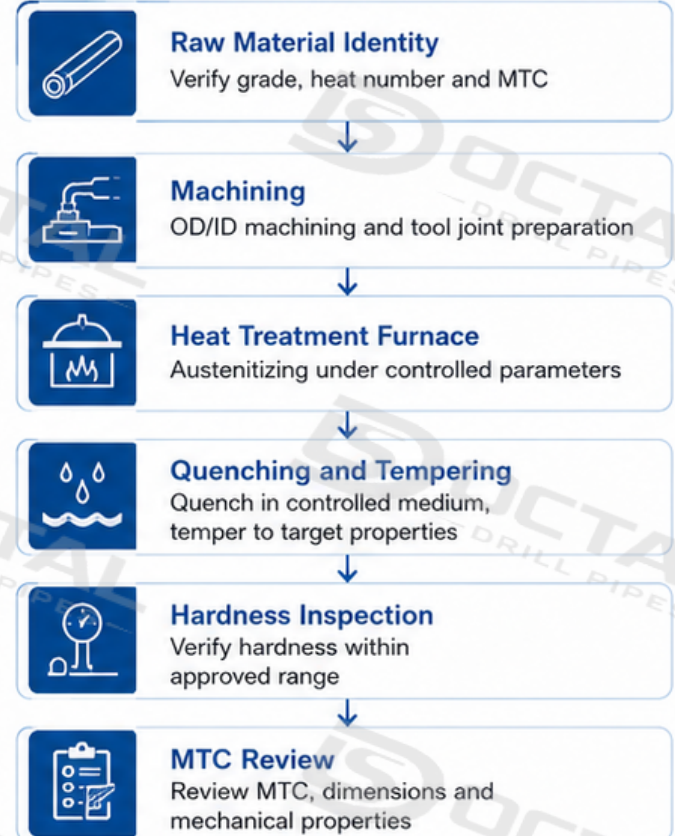


Portable hardness testing to verify material performance



MTC review ensures chemical composition and mechanical properties compliance

DRILL COLLAR PRODUCTION AND CONTROL FLOW



ENGINEERING NOTE

Heat treatment for drill collars is not only a strength process—it is a critical control for hardness consistency, dimensional stability and service reliability under high torque, axial load and abrasive drilling conditions. Proper quench-and-temper control reduces cracking risk, extends service life and ensures safe drilling performance.

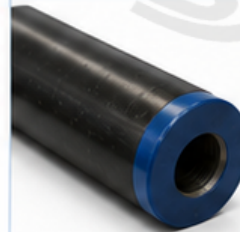
Configuration logic and acceptance meaning for API 7-1 drill collar supply



CONFIGURATION ITEM	WHY IT MATTERS
Drill Collar Type	Slick, spiral, non-magnetic or short collar affects BHA design and field use
Outside Diameter	Controls BHA stiffness, hole clearance and weight contribution
Inside Diameter	Affects mud flow, internal tool passage and collar weight
Length	Supports BHA spacing, handling and tally control
Material	4145H Modified or equivalent material must match MTC and order requirement
Heat Treatment	Quench and temper controls strength, hardness and toughness consistency
Connection	Must match the approved BHA and drill string connection plan
Bore Condition	Affects drift passage, flow path and internal tool clearance
Surface Protection	Reduces handling damage before site receiving inspection
Packing Mark	Links the physical collar with packing list and release documents

DRILL COLLAR TYPE SUMMARY

SLICK DRILL COLLAR

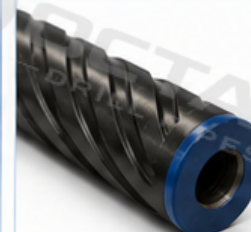


Provides weight and stability for general drilling applications.



Balanced performance and wide applicability

SPIRAL DRILL COLLAR

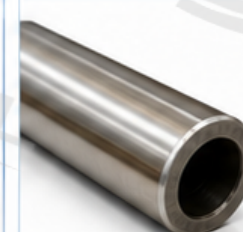


Enhances cuttings transport and reduces stick-slip tendency.



Improved hole cleaning and drilling efficiency

NON-MAGNETIC DRILL COLLAR

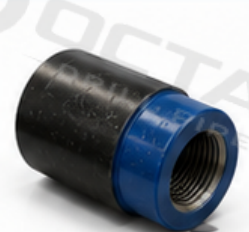


Effective for MWD/LWD operations requiring low magnetic response.



Protects downhole tools and measurement accuracy

SHORT DRILL COLLAR / PONY COLLAR



Used for BHA spacing adjustment and make-up protection.

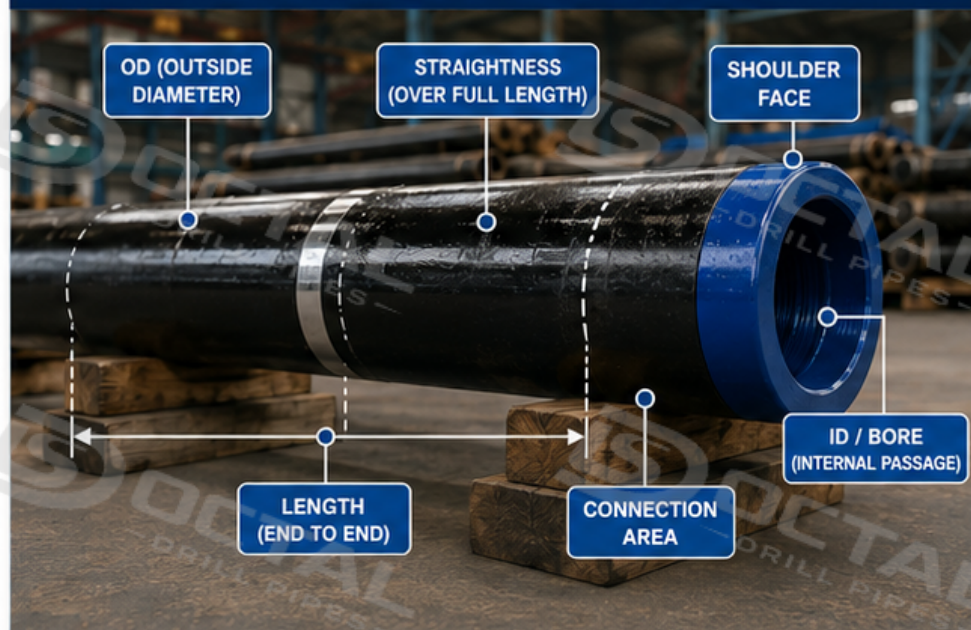


Flexible configuration and connection protection

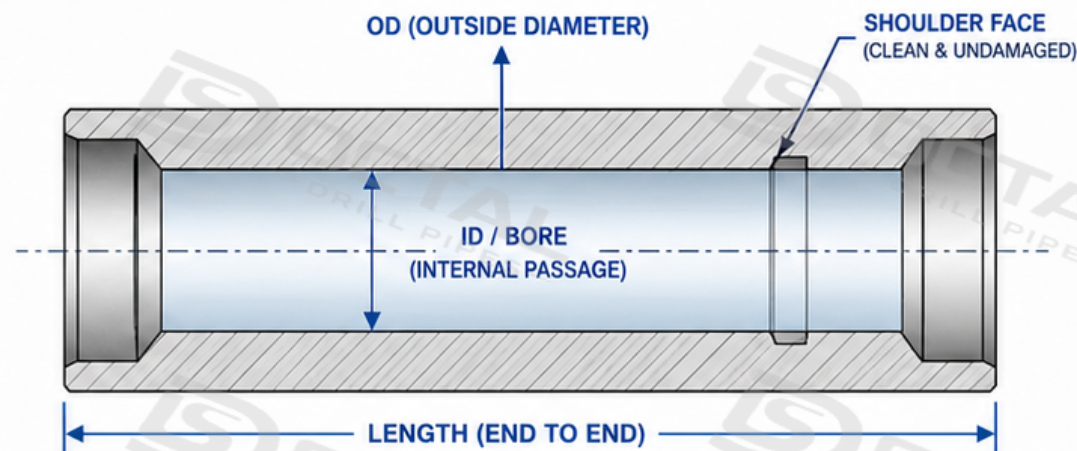
06 DIMENSIONAL AND BORE CLEARANCE REVIEW

Finished drill collar geometry and functional internal passage review

INSPECTION POSITIONS – ALL KEY AREAS



SECTION VIEW – DRILL COLLAR GEOMETRY & BORE PATH



The bore should be treated as a **functional passage**, not only as a drawing dimension.

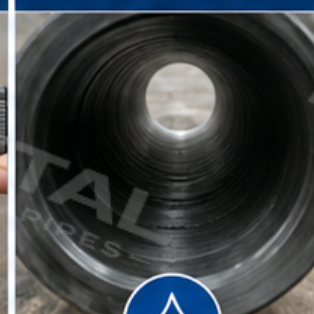
CHECK ITEM	WHAT TO CONFIRM	PRACTICAL MEANING
OD	Matches approved drawing or order	Controls BHA stiffness and hole clearance
ID / Bore	Clean and unobstructed	Supports mud flow and internal tool clearance
Length	Matches project requirement	Supports tally and BHA spacing
Straightness	No abnormal bending	Reduces handling and assembly problems
Connection Area	Pin / box dimensions match approved connection	Supports compatibility with BHA components
Shoulder Face	Clean and undamaged	Supports torque transfer during make-up
Surface Condition	No harmful visible defects	Reduces receiving rejection risk

OD CHECK



Measure at multiple positions around the OD

BORE CHECK



Visually inspect for clean, smooth passage

STRAIGHTNESS CHECK



Check with dial indicator across full length

07 CONNECTION AND THREAD PROTECTION

Pin and box connection review before export packing



Review Point	What to Confirm	Risk Controlled
Connection Identity	Connection type matches order and marking	Prevents BHA compatibility errors
Thread Profile	Threads are complete and clean	Reduces make-up difficulty
Shoulder Face	Shoulder surface is clean and protected	Supports torque transfer
Pin and Box Ends	No visible impact damage	Reduces site rejection risk
Thread Protector	Correct protector installed tightly	Protects connection during transport
Marking Visibility	Size, material, connection and heat / lot identity remain readable	Supports receiving inspection



Thread protectors
are part of the
shipment release
condition.



SHOULDER FACE

Clean, smooth and
free from nicks
and corrosion.



MARKING VISIBILITY

Marking remains
clear and readable
after protection.



EXPORT PACKING

Connections protected,
bundled and ready for
secure transport.

08 PRE-SHIPMENT RELEASE AND TRACEABILITY

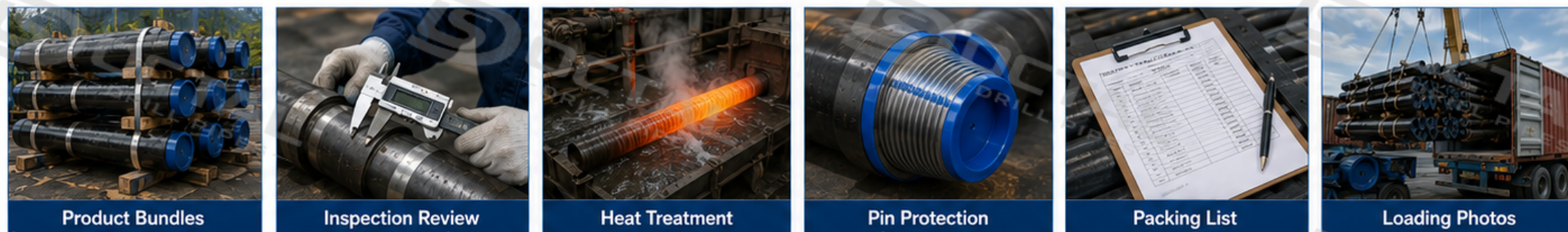
Release evidence chain for product identity, inspection and export packing

Review Area	What Was Checked	Release Basis
Product Identity	Size, material, connection and heat / lot marking	Product marking matched order and records
Material Control	MTC, chemical composition and heat number	Material traceability was maintained
Heat Treatment	Quench-and-temper record or batch reference	Heat-treatment route matched order requirement
Dimensional Review	OD, ID, length, straightness and bore condition	Finished collar matched approved configuration
Hardness Review	Representative hardness values	Hardness was controlled for service reliability
Connection Inspection	Thread, shoulder, pin / box condition and protectors	Connection ends were protected for export handling
Packing Condition	Bundle stability, end protection, visible tags and packing list	Shipment condition matched release documents

TRACEABILITY CHAIN



PHOTO EVIDENCE



A controlled release package should prove that the marked drill collar, material heat, heat-treatment batch, inspection record, connection review and packing list refer to the same product.