TESSALink™ Trace
Mobile Appliances for Hands-Free Data Capture
What problem are we trying to solve?
Leveraging automated data collection in hazardous offshore environments to automate the collection and correlation of real-time data with uniquely identified tubular assets to understand the impact of drilling variables (such as rotation hours and perforated meters) on the integrity and overall lifecycle of drill pipe.

How will we solve it?
The TESSALink™ Trace Pipe Tally solution leverages UHF passive RFID engineered and tested in the Oil and Gas market from Upstream to Downstream and both Onshore and Offshore to enable automated digital tallies of tubulars such as rods, casing, and drill pipe.

TESSALink™ Trace is the first digital pipe tally system created around Passive UHF RFID technology. UHF RFID already has wide adoption in the unique identification of assets in industrial applications, preventative maintenance and inspections, and the historization of digital records for asset lifecycles. TESSALink™ Trace extends this capability to allow for tubular assets at the wellbore to be identified and recorded in real-time, and to correlate that data through the TESSALink APIs with real-time data from rig control systems to create new insights into how drilling variables and conditions influence tubular integrity.
How does it work?

The TESSALink™ Trace solution consists of hardware and software components that work together to allow real-time high-speed data capture of tubulars in hazardous environments, and the transmission of that data to the TESSALink cloud-based data center where the data is readily available to other point systems, machine learning technologies, or data analysis tools.

What does it include?

1. TESSALink SaaS asset management software for the provisioning, registration, tracking, and traceability of tubular assets.
2. TESSALink APIs for the integration and portability of data across other systems and data lakes.
3. Ruggedized UHF RFID tags manufactured by TESSALink and certified by leading labs to operate in high temperature, high pressure, abrasive chemicals, and demanding weather environments.
4. A customizable Class 1 Division 2 Intrinsically Safe industrial appliance and enclosure for high-speed data collection and data transmission.
5. A custom RFID Antenna Array of between one to eight RFID antennas and wire mesh antenna cables built into a single or dual offset configuration and attached at the rig based on unique engineering, compliance, and read resolution requirements.
TESSALink’s Enterprise Asset Management tools paired with TESSALink Trace-enabled edge appliances follow a simple 4-step workflow to register, provision, and prepare tubular assets for use with a digital pipe tally system. Using this single core workflow, tubular assets can be digitally transformed into logical assets that contain historical and real-time data that can be used to analyze asset integrity and how it correlates to specific drilling variables or conditions.
Use our Asset Modeling tools to create containers of meta-data for a digital representation of physical assets.

**Scheduling**
Create form templates for complete control over the way your Drill Pipes are inspected and maintained.

**Custom Attributes**
Model assets specifically for your customers in and deliver a fully custom-built digital version of their assets.

**Images and Documentation**
Attach critical documentation and images to provide your users with the necessary data to perform their function.

**Tags**
Associate Tags to your assets and asset templates so you and your customers can find data on your own terms.
TESSALink Assets are anything you want them to be.

This Heavy Weight Drill Pipe Asset Template will be used to create thousands of assets with just a few clicks.

Add Images, attach critical documentation, and call out minimum and maximum thresholds for measurements like wall thickness.

Create Forms and set schedules for regular care of your assets. Create links from forms to asset data to record new measured lengths, current wall thickness, and new weights.
The RFID Provisioning Process is key to establishing and maintaining unique identity of your assets for data collection.

Rugged Identity
RFID chips repackaged into ruggedized containers built to withstand harsh environments to maintain asset identity throughout its life.

Embedded RFID
RFID can be embedded into assets using press fit, screw in, or heavy-duty adhesive to make the RFID non-obtrusive to operation while still providing optimal performance.

Leveraging RFID
The proper RFID, reader, and hardware combinations can be used to enable logistics operations, inspection procedures, and maintenance workflows with the same technology.

Asset Creation
Associate the RFID chip to the asset's unique identifier to enable the quick identification of assets in the field.
Drill Pipe Visibility Workflow

RFID Provisioning

The TESSALink PipeTracker 3 was tested by T.H. Hill to ensure that drill pipe with embedded RFID would not lose integrity after experiencing downhole conditions.

Fixed Readers and antenna arrays can be configured to the needs of your operation. Up to 8 antenna can be attached to one reader in single or multi-level ring structures under the rig floor.

The antenna can also be adjusted for read strength and speed to ensure 100% data capture reliability.

The TESSALink RFID suite of solutions includes handheld readers that connect to mobile devices via Bluetooth, and fixed readers with antenna arrays.

Long Range RFID Readers can be used to scan many assets at once to perform logistics procedures or be tuned down to select one asset for inspections.
The TESSALink Trace Appliance can be customized for your application. The components are containerized to withstand specific environments.

Custom Components
The data collection appliance can be configured with specially selected components and containerized with the specific needs of the application in mind.

Antenna Config
Based on the needs of the application, the RFID antenna arrays can be configured and attached under the rig floor.

Easy Updates
The TESSALink Trace app can easily be updated and maintained remotely.

Appliance HUD
View the status of all the components of your appliance and dig deeper into the details from the HUD.
The TESSALink Trace Appliance can be customized for your application. The components are containerized to withstand specific environments.

The TESSALink Trace HUD will give you the number of Tags that you have read, the status of all your components, and tools to diagnose issues.

As the Trace App reads tags, the user can customize how quickly the app stores and sends the read data to the TESSALink Corporate cloud and relate the date to real assets based on network capacity.
The TESSALink™ Trace software provides a real-time pipe tally screen in addition to an on-demand Pipe Tally Report.

Asset Correlation
The appliance is connected to the TESSALink corporate cloud via RESTful API. The API will correlate the scan data to specific assets.

Pipe Tally
TESSALink will provide a pipe tally report with a list of assets that were scanned in the order that we were scanned.

Platform Extendibility
The TESSALink Platform is open and extendable to your business intelligence tools.

Depth Tracking
TESSALink will provide depth tracking based on the measured length of the assets scanned, the bit depth and the ability to show tapered strings.
Dynamic Generation of the drill string drawing allows users to see changes in the sections of the string based on asset data to display changes in component types.

Operators can manually enter additional drill string components to include BHA and untagged assets.

Generate reports as the data is being collected to get point in time status of the well depth, components used, and rotation hours. The Pipe Tally report is ‘out-of-the-box,’ but additional data elements can be correlated to drill pipe to provide additional insights.
Antenna Array

- UHF technology
- Easy to install and operate
- Antenna adjustment from 21” -80” diameter
- Drill Pipe, Casing, Risers, Bearing can be recorded
- Can be located in C1D1 locations
- Custom designs
Tag Embedding and Installation

- Passive UHF tags
- Onshore and Offshore embedding
- Low cost solution
- Certified field technicians located globally
- Fast mobilization
- Data allocation for tubulars into database