



# **Inland Inspections, LLC**

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**Chris Tucker - Founder/Owner of Inland Inspections (1985).**

**Beginning his 40<sup>th</sup> year in the energy industry.**

**Inland provides 3<sup>rd</sup> Party Inspection and Testing services from the Permian Basin to the US Gulf Coast for Trucking, Rail Cars, Pipelines, Storage Facilities, Barges and Ships.**

**Inland provides Loss Prevention and Consulting services in USA, Canada, Caribbean, South America, Europe & Asia.**

**Instrumental in recovering over nearly 200,000 barrels of crude losses from the crude storage terminal in Aruba.**

**Primary witness for US Senate hearing regarding crude oil theft from Federal and Indian leases.**

**Has trained over 5,000 people in Loss Prevention and Quality issues.**

**Specialize in projects or operational activities such as:**

- **Crude oil blending.**
- **Resolution of crude oil losses for trucking and pipeline operations.**
- **Conducted over 100,000 crude truck audits.**
- **Conducted thousands of RVP testing for crude in the field.**
- **Demurrage issues.**
- **Facility assessments.**
- **Developing and implementing Loss Prevention and Quality programs for clients.**

I would like to thank the COQA for the opportunity to make this presentation in order to share an overview regarding this topic.

As the primary purpose of this organization is to address crude oil quality issues the importance in obtaining the correct type of samples are crucial for the testing.

As the old cliché goes in the computer world.....if you put garbage in then you are going to get garbage out!

It doesn't matter if you have a crude truck driver running a test in the field or if you are in a laboratory using a million dollar instrument. If you have the wrong type of sample or even worse a bad sample you are not going to get accurate representative test results.

This is frustrating for everyone involved as inaccurate test results due to bad or wrong type of samples will result in inaccurate data being used to make a decision and the client could end up spending a great deal of time, effort and money chasing the wrong issue or even worse a non-issue!

So how do we try to avoid these issues?

***Communications!***

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Let's go thru a typical job nomination scenario:

Customer: Please sample Tank 1234 @ Big Crude Oil Terminal.

Inland: Orders received. Thank you for the work.

Inland: What are the plans for the samples?

Customer: Take them to your lab and test it.

Inland: What tests would you like us to run?

Customer: API, Sulfur, Sediment & Water (S&W), H<sub>2</sub>S & Trace Metals.

Sounds straight forward and simple enough right?

However we as the service provider need additional information from the customer in order to obtain the correct type of samples and to determine which method to use for the testing.

Is the customer's goal to test for:

- Overall tank results?
- Profile of the tank?
- Blending purposes?
- Contract specs for a purchase or a sale?
- Other?



Depending on the customer's response then the following types of samples would typically be considered.

- API & Sulfur for overall tank results.  
(All Levels, Running Average or Profile composite samples.)
- API & Sulfur for profile or stratification.  
(Upper, Middle & Lower or Profile samples.)
- Sediment & Water  
(All Levels, Running Average or Profile composite.)

- Hydrogen Sulfide in Vapor  
(All Levels or Running Average.)
- Hydrogen Sulfide in Liquid  
(All Levels or Running Average.)
- Trace metals.  
(All Levels, Running Average or Profile composite.)

**Note: Please always ask for samples in duplicate!**

If there is only one thing you take away from this presentation please let it be this.....

***DIFFERENT TEST METHODS CAN and WILL PRODUCE DIFFERENT RESULTS!!!!***

So let's look at some of the different methods for performing the requested tests in this scenario.

- API: (Hydrometer - Field or Lab method), Densitometer?
- Sulfur: (X-ray)
- Sediment & Water: (Centrifuge - Field or Lab method), Water by Karl Fischer, Water by Distillation, Sediment by Extraction?
- Hydrogen Sulfide: (Liquid or Vapor phase)?
- Trace metals: (Which metals and by which method)?

As you can see by all the different potential types of samples and test methods which are available the need for a robust line of communication between the service provider and the client is needed in order to accomplish their goals for the testing of the crude oil.

*Thank you for your time!*

The following photographs are a few examples of the types of equipment typically used through out the industry and our Wall of Shame for submitted samples.

# Railcar Ladle



# Crude Truck Gauging Kit



# Oil Thief





# Centrifuge Tube



# Cage Sampler



# Zone Sampler



# OQ LACT Unit with Sample Pot



We would like to thank OQ Measurement for the pictures of the LACT unit.

# Wall of Shame!



# H<sub>2</sub>O (Crude) Truck!



# Plastic Cup Crude Samples



# EagleFord Condensate Paraffin





# Wood Crude Oil Tank

