QA/QC: Oklahoma DOT

2007 National Conference on Pavement Management

May 6-9, 2007 - Norfolk, VA

Presented by:
Justin Calvarese, P.E.
Oklahoma Department of Transportation

QA/QC: Oklahoma DOT

Justin Calvarese, P.E.
Oklahoma Department of Transportation
Planning & Research Division
Pavement Management Branch

Special Thanks to:

ODOT Pavement Management Branch

- Ginger McGovern, P.E., Pavement Management Engineer
- Bill Dickinson, Transportation Manager

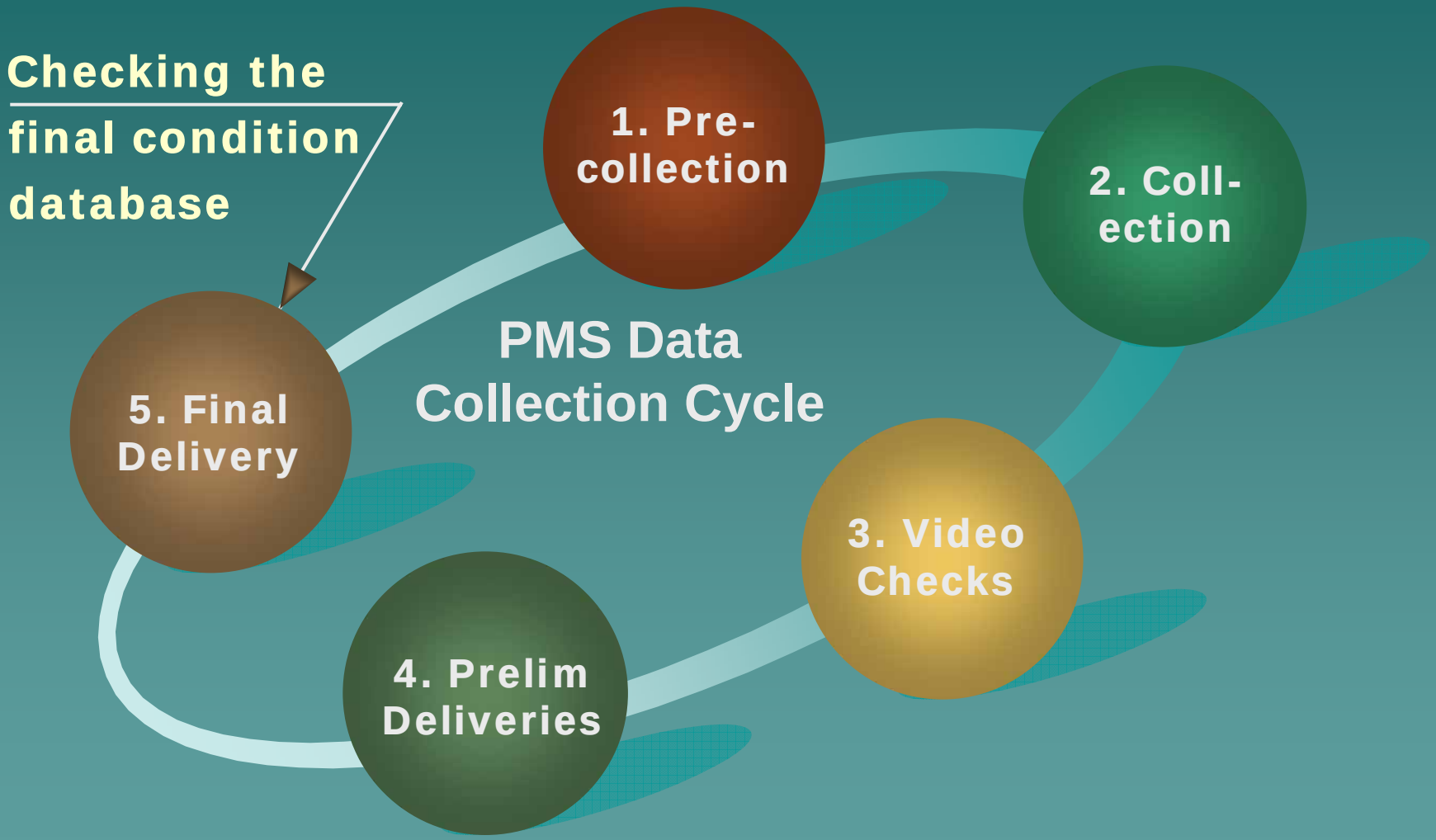
Checking Data Quality

1. Why?

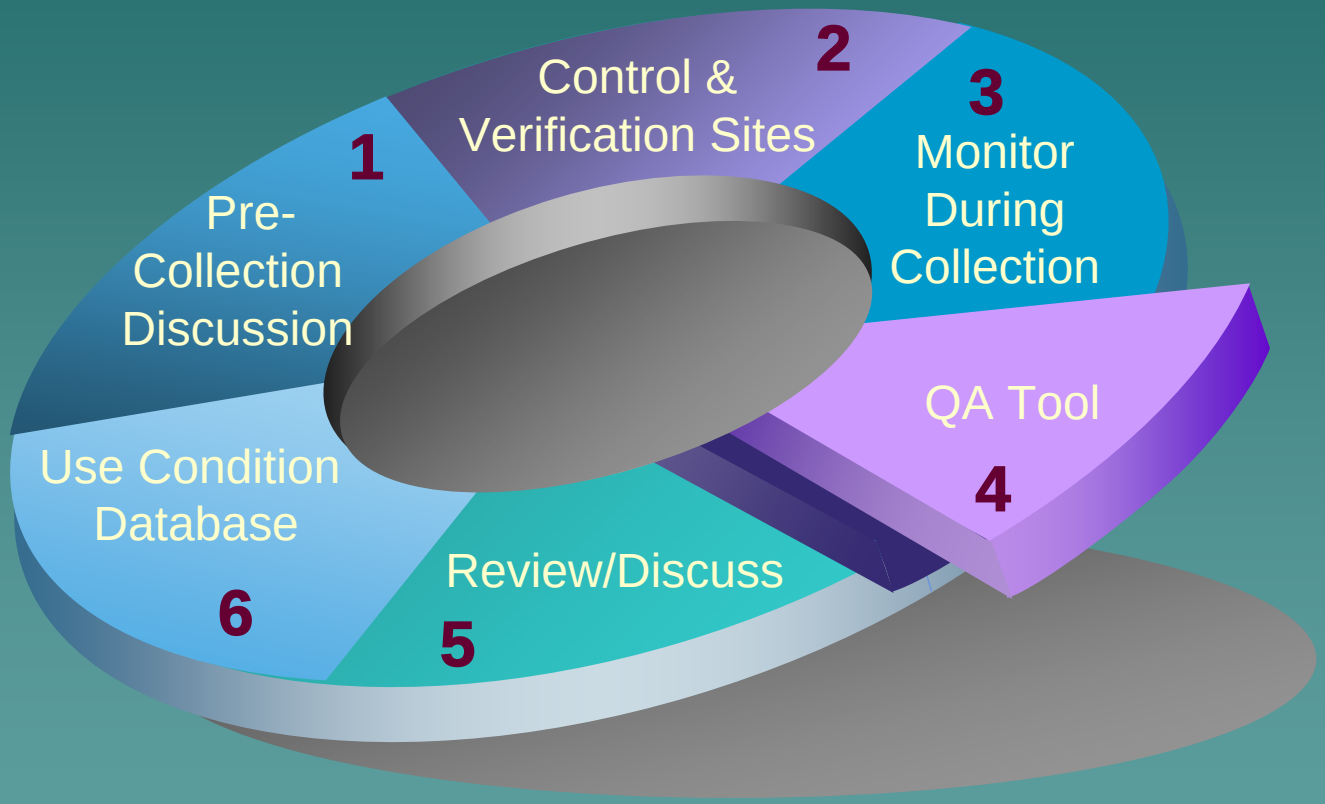
2. What?

3. How?

Overall QC/QA Process



Bringing it All Together



How Did The Process Evolve?

- Started out with individual queries
- Contract with APTech
  - Checked distress ratings
  - Document process
  - Combine into one process/interface
- Evolved into QA Tool

Why Use A Tool?

- **Lots of data**
  - 8,000 miles collected every 0.01-miles or **800,000 records annually**
- **65 data fields**
  - 10 supplied by ODOT in shell
  - 55 collected by contractor
- 800,000 x 65 = **52 million pieces of data annually!**

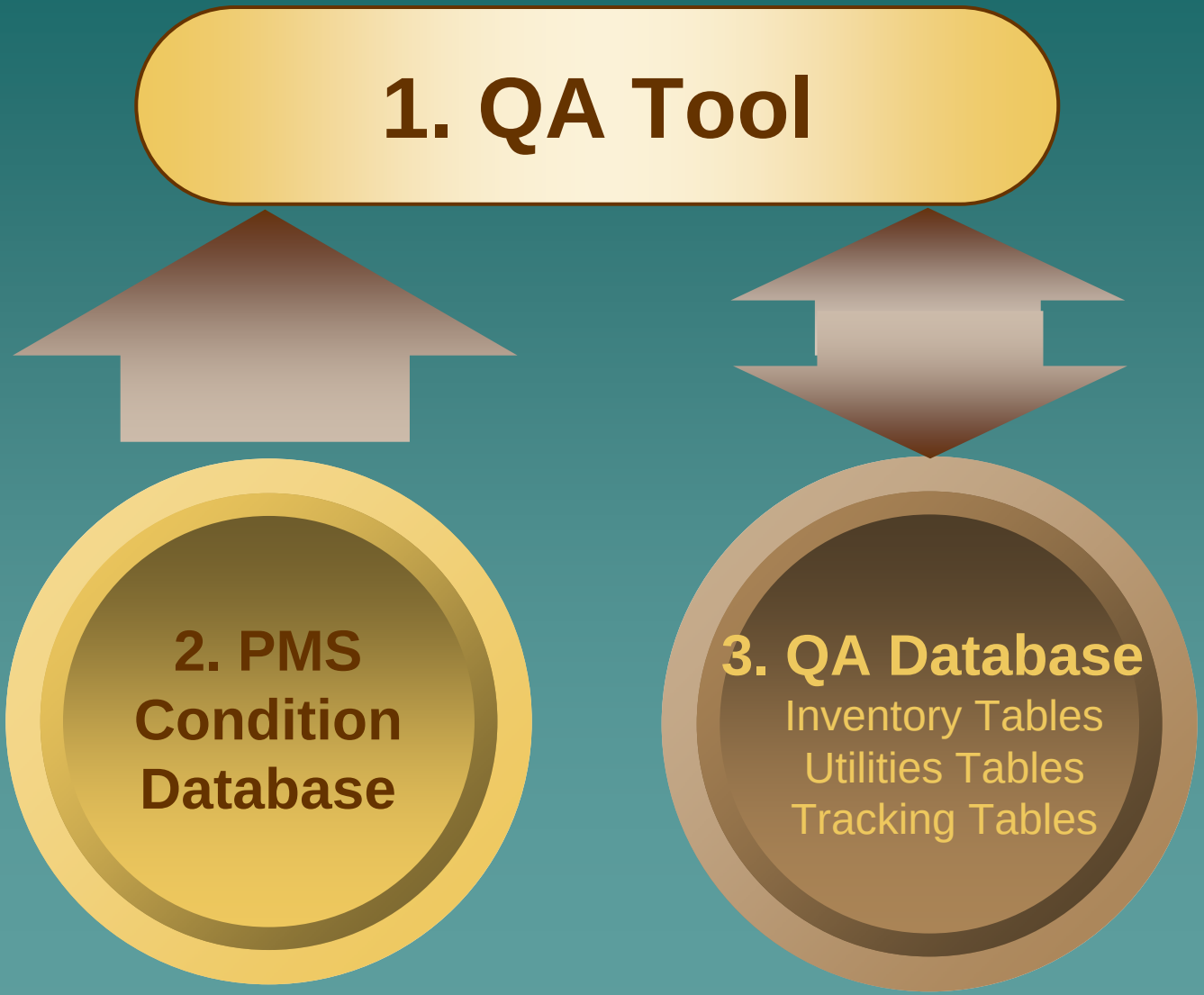
The QA Tool - What Is It?

1. **QA Tool**
   - An interface/program

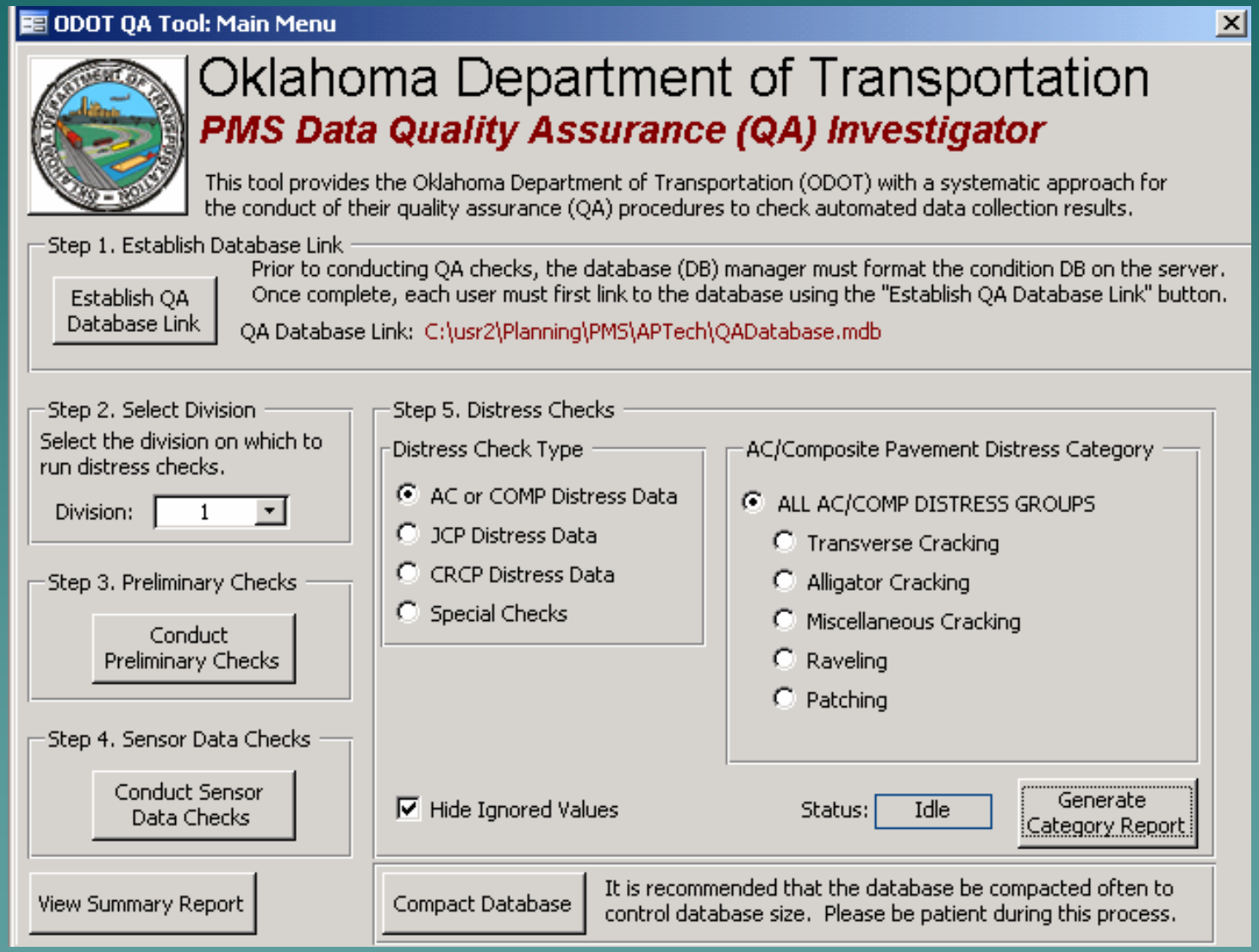
2. **Condition Database**
   - Shell filled in by the contractor

3. **QA Database**
   - ODOT-Inventory tables
   - Utility tables
   - Tables for tracking results

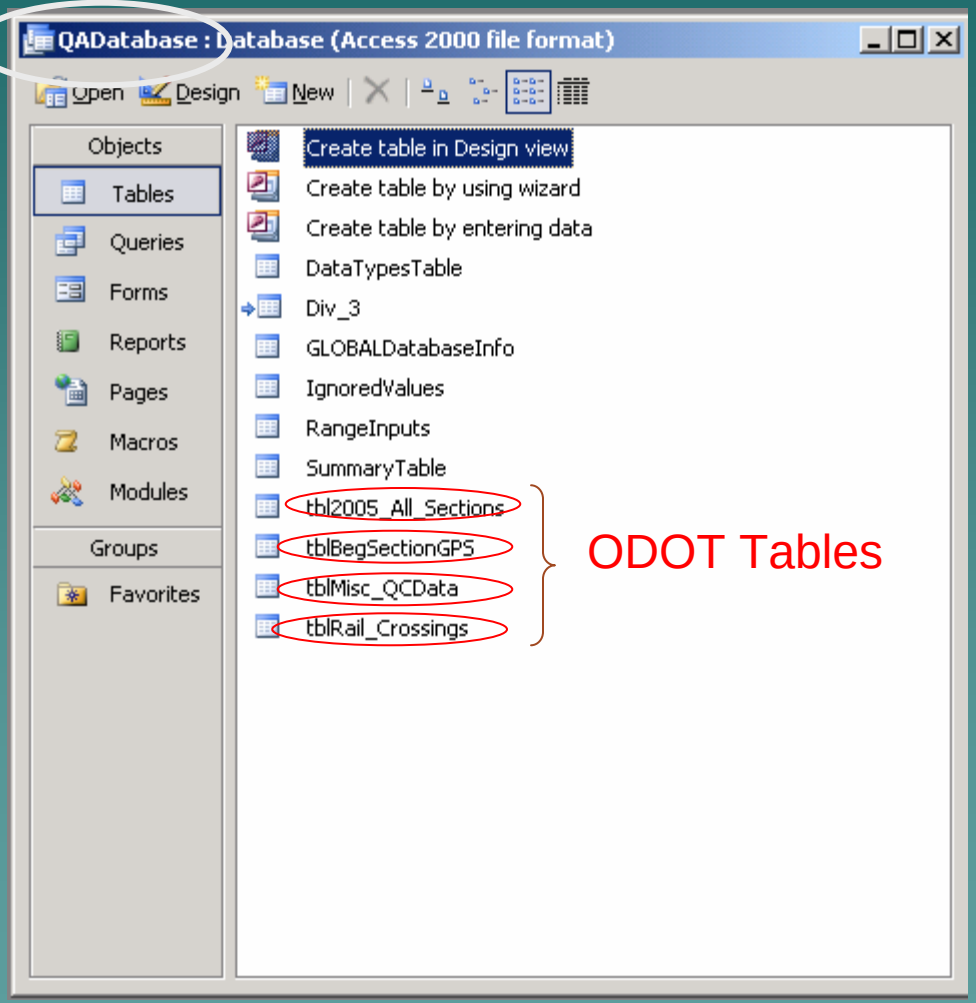
How Does It Work?



QA Tool – The Interface



QA Database

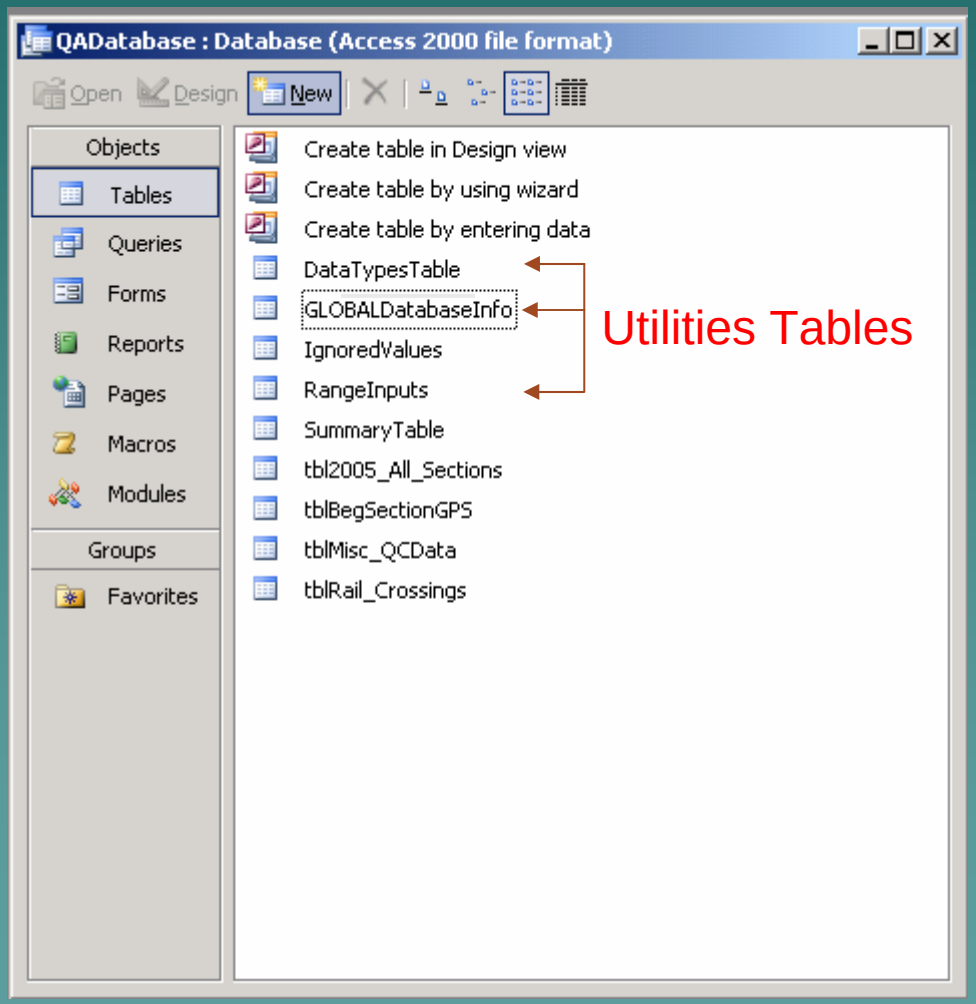


ODOT Tables

- All_Sections
  - Section lengths
  - Section IDs
- BegSectionGPS
  - Coordinates of each beginning point
- Misc_QCData
  - Number of bridges in each section
- Rail_Crossings
  - Location of each RR crossing

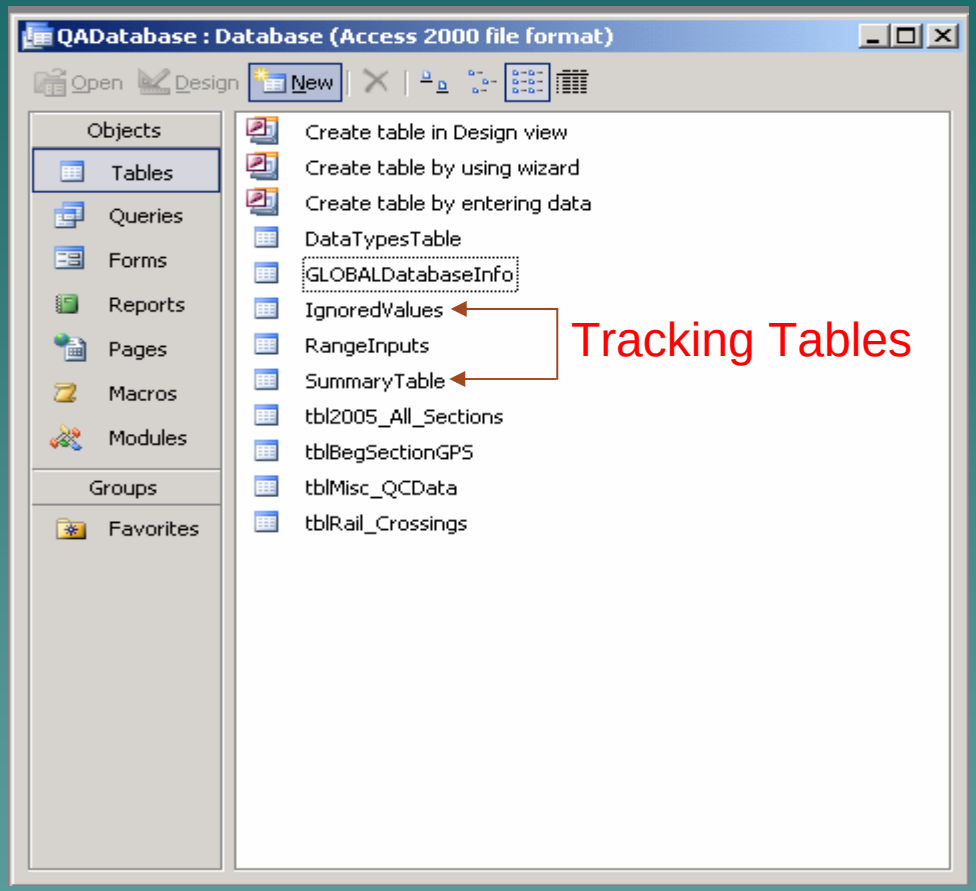
QA Database

Utilities Tables



- Data Types Table
  - What is the field supposed to be?
- GlobalDatabaseInfo
  - Stores links to the QA Tool
- RangeInputs
  - Expected highs and lows for sensor and distress data

QA Database



Tracking Tables

- Ignored Values
  - We investigated and want to ignore an error
- Summary Table
  - What has passed the checks and what hasn't

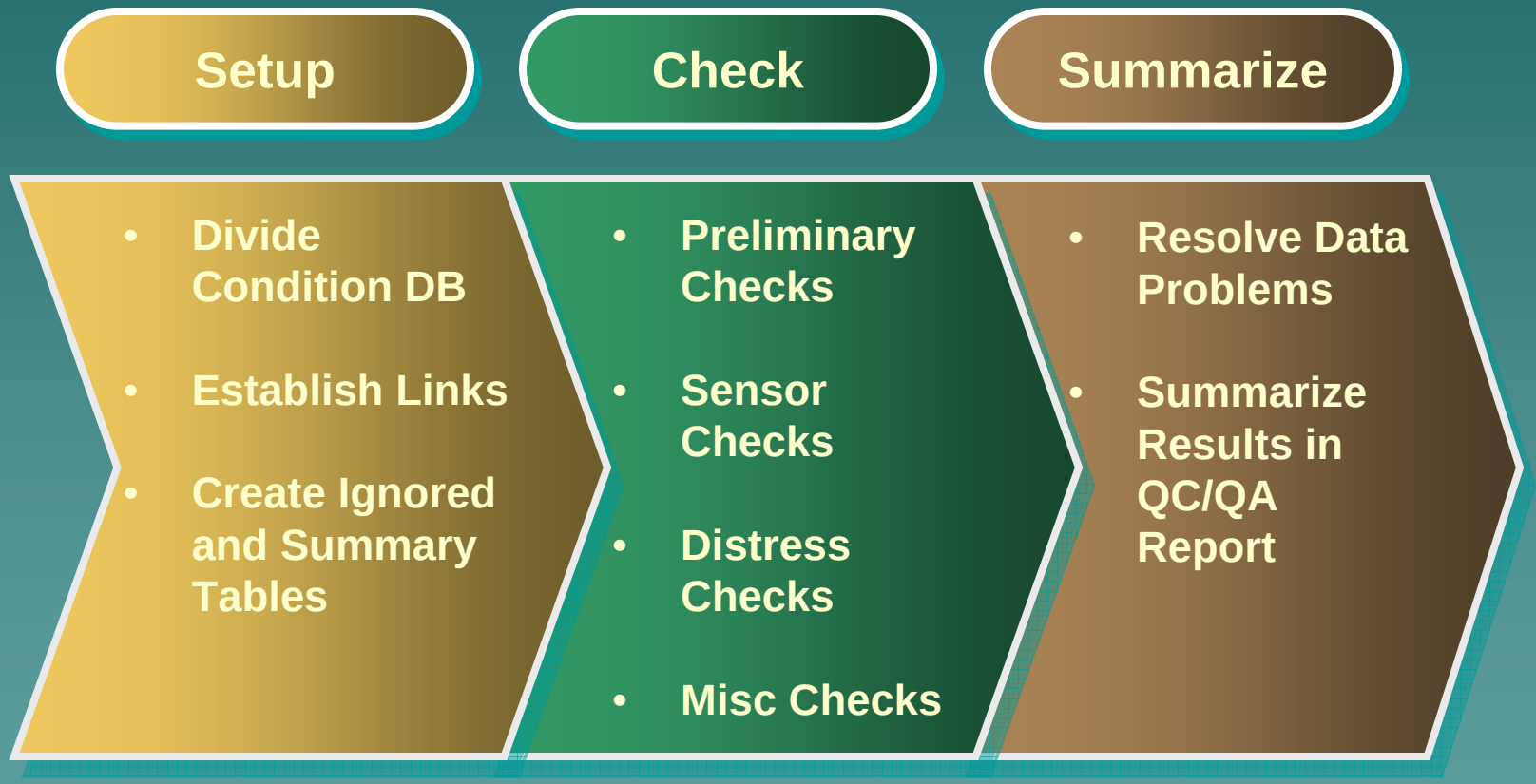
Simplified Work Flow

1. Divide up database
   - By field divisions
   - More manageable size
   - Easier to keep track

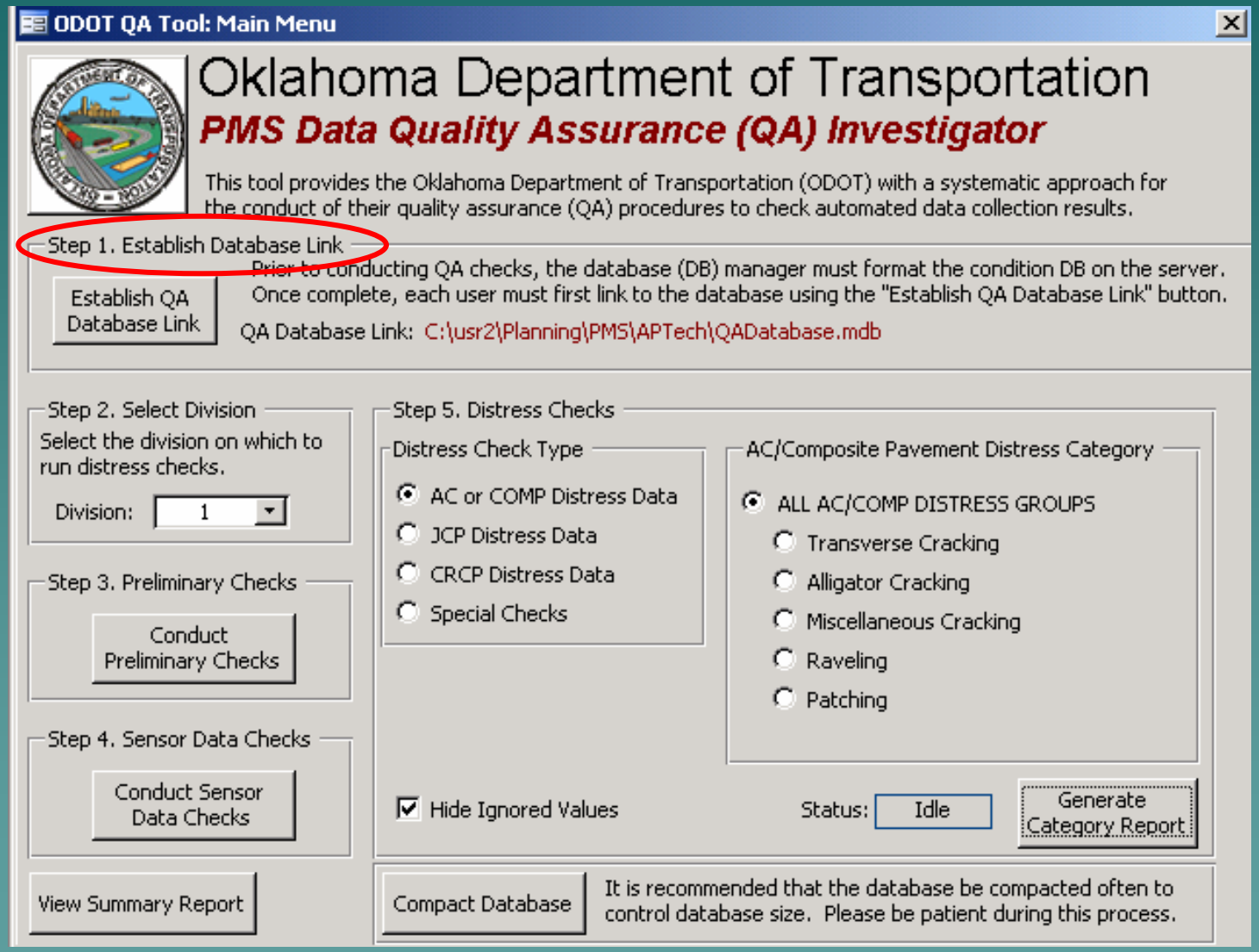
2. Set up the QA Tool (link the tables)

3. Do the Checks

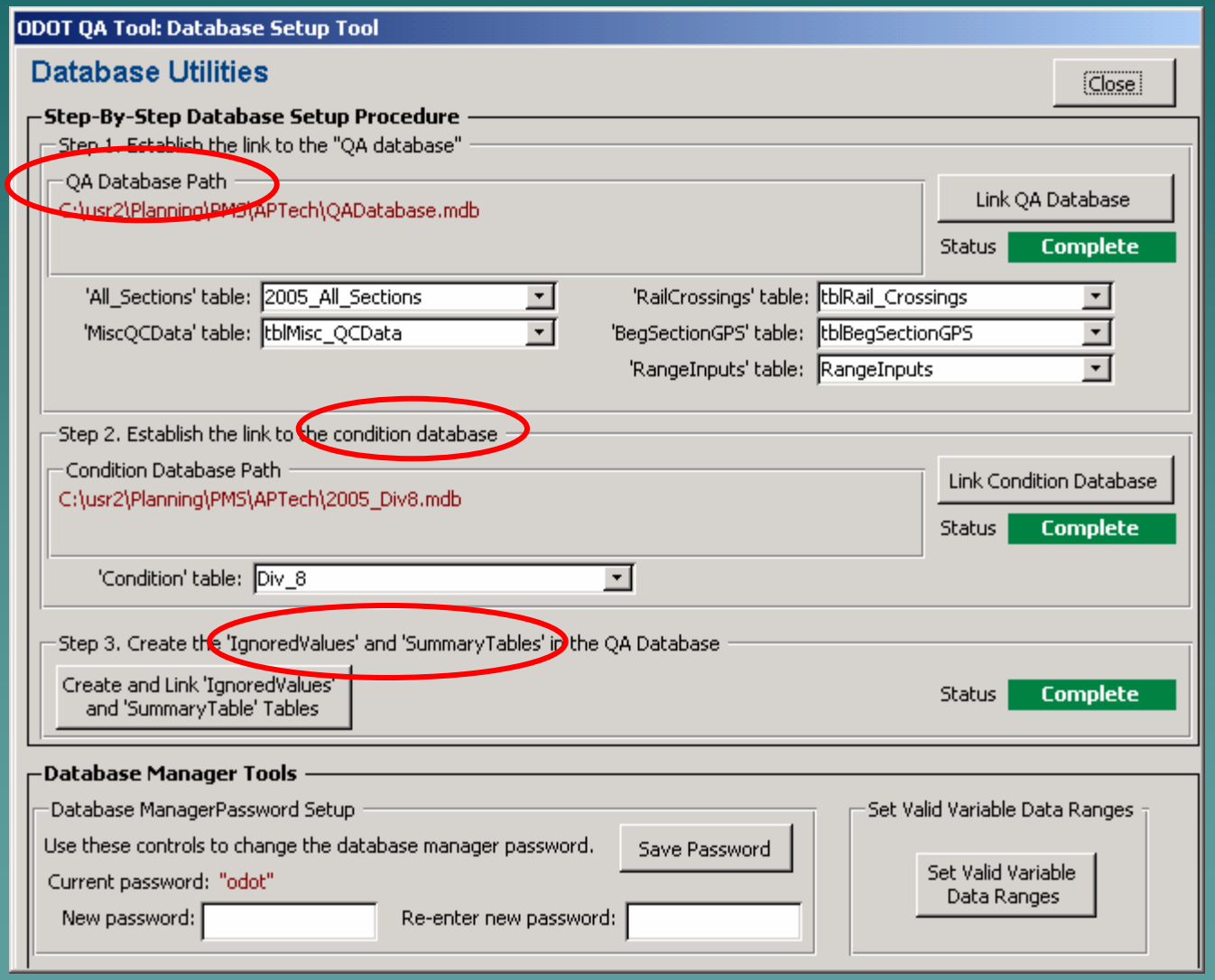
QA Tool Detail Process



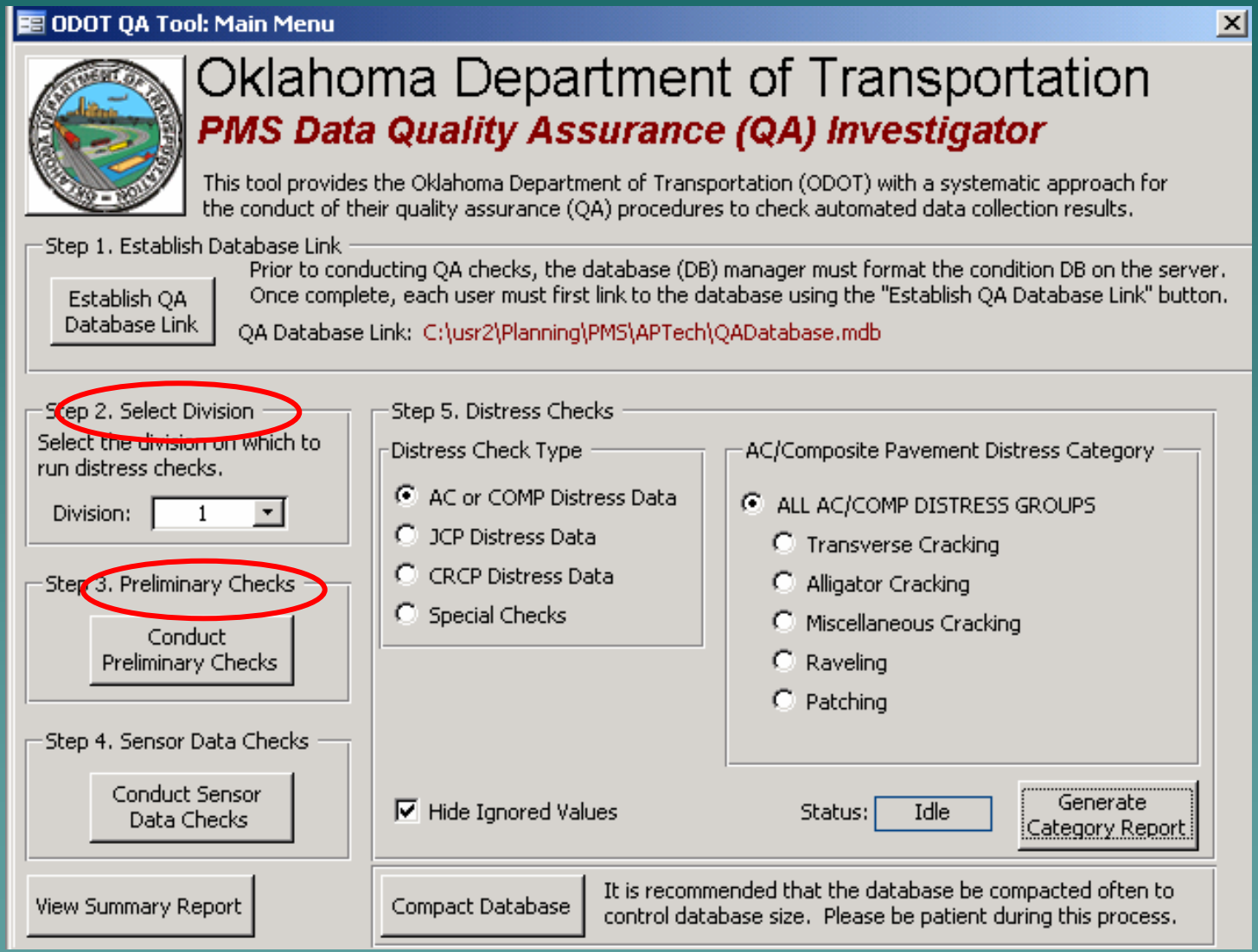
QA Tool – Getting Started



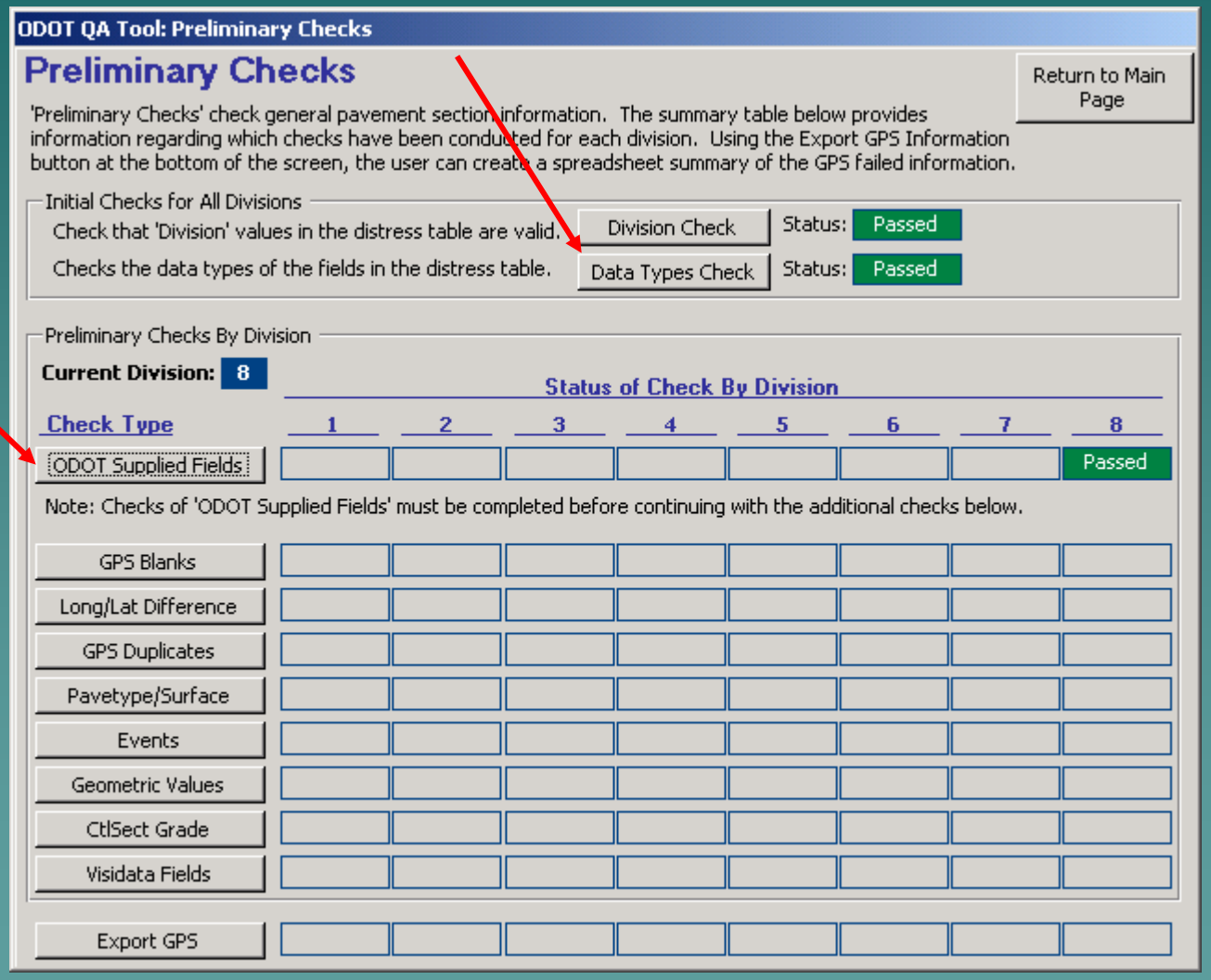
Set Up Database Links



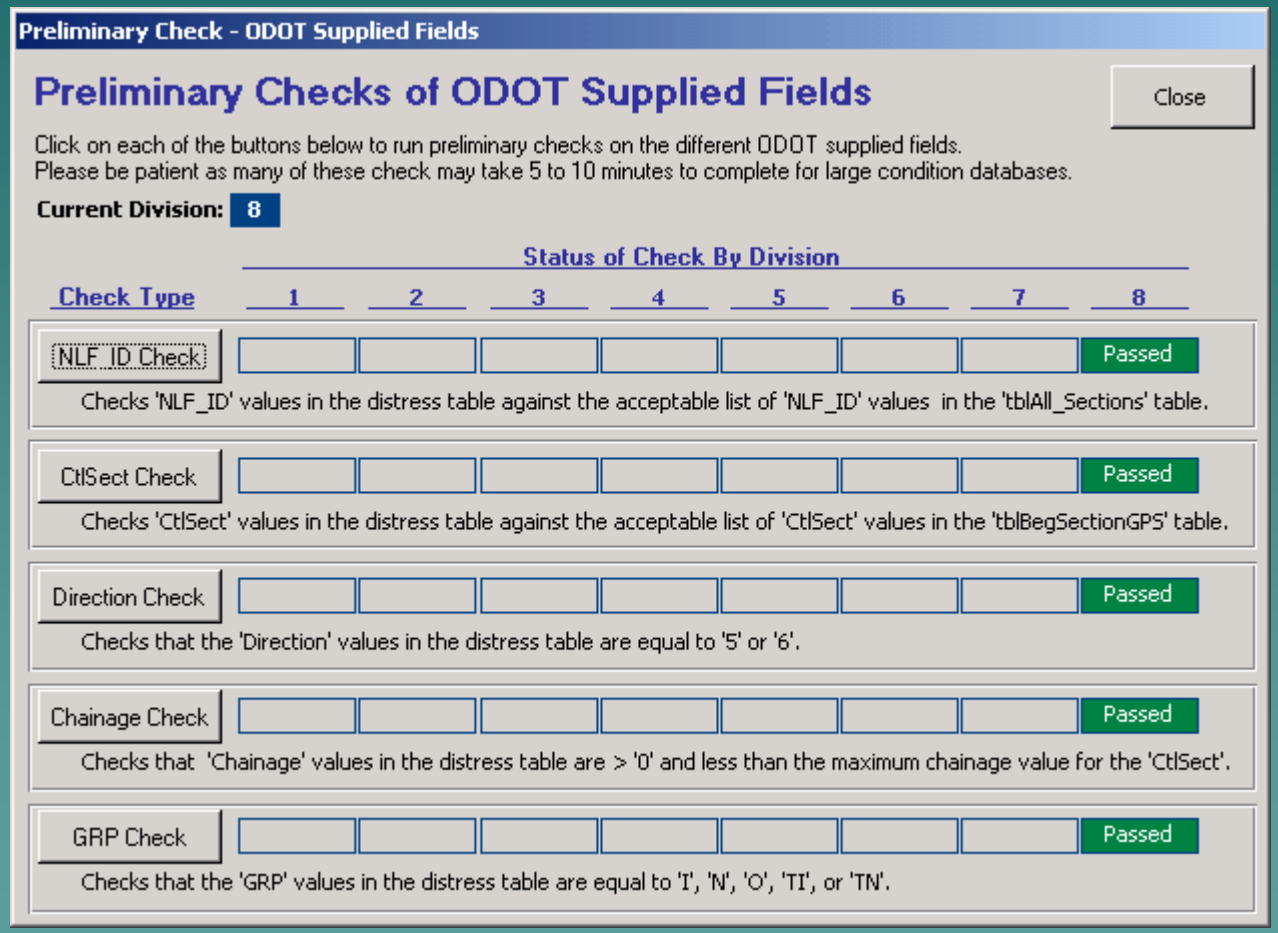
QA Tool – Start The Checks



Preliminary Checks



ODOT-Supplied Fields

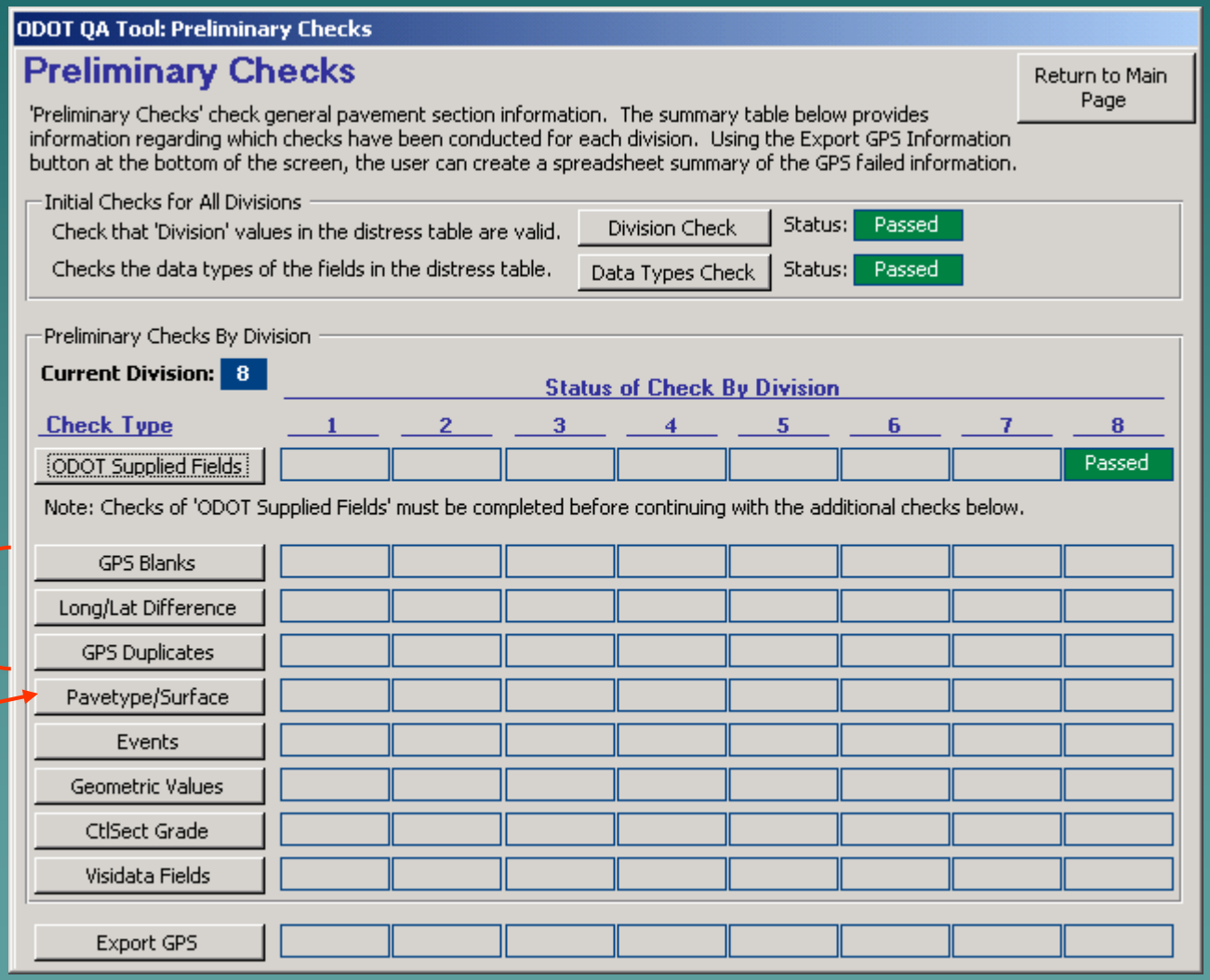


Preliminary Checks

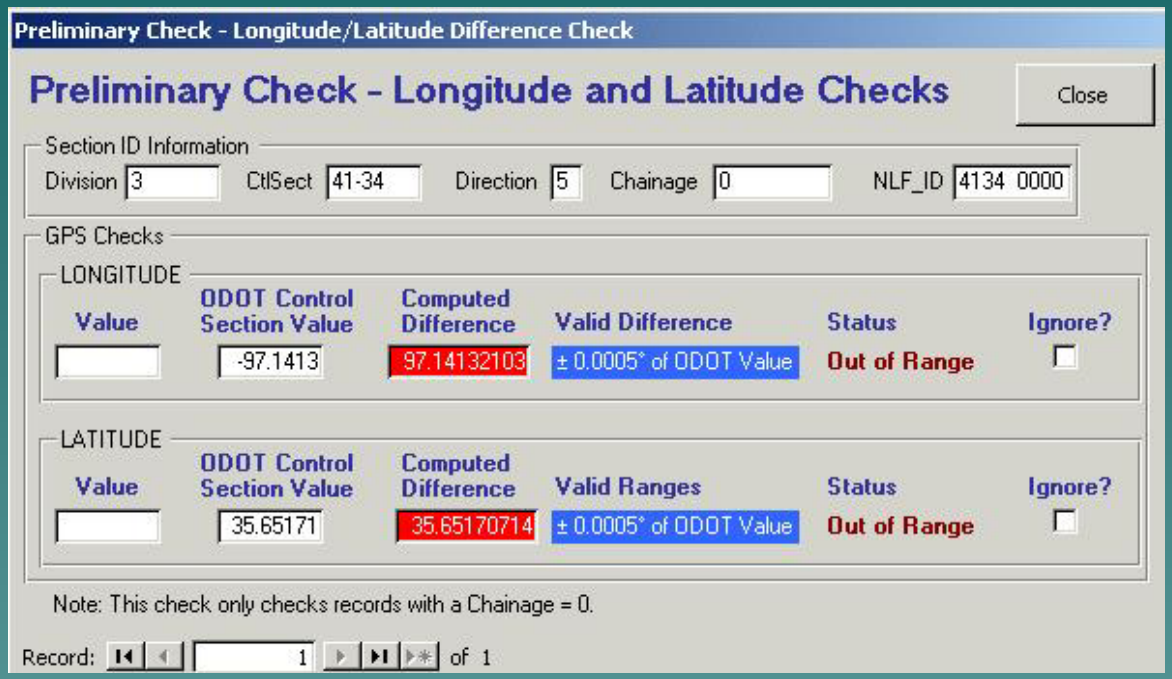
Most Critical

Where are we?

What kind of pavement is it?

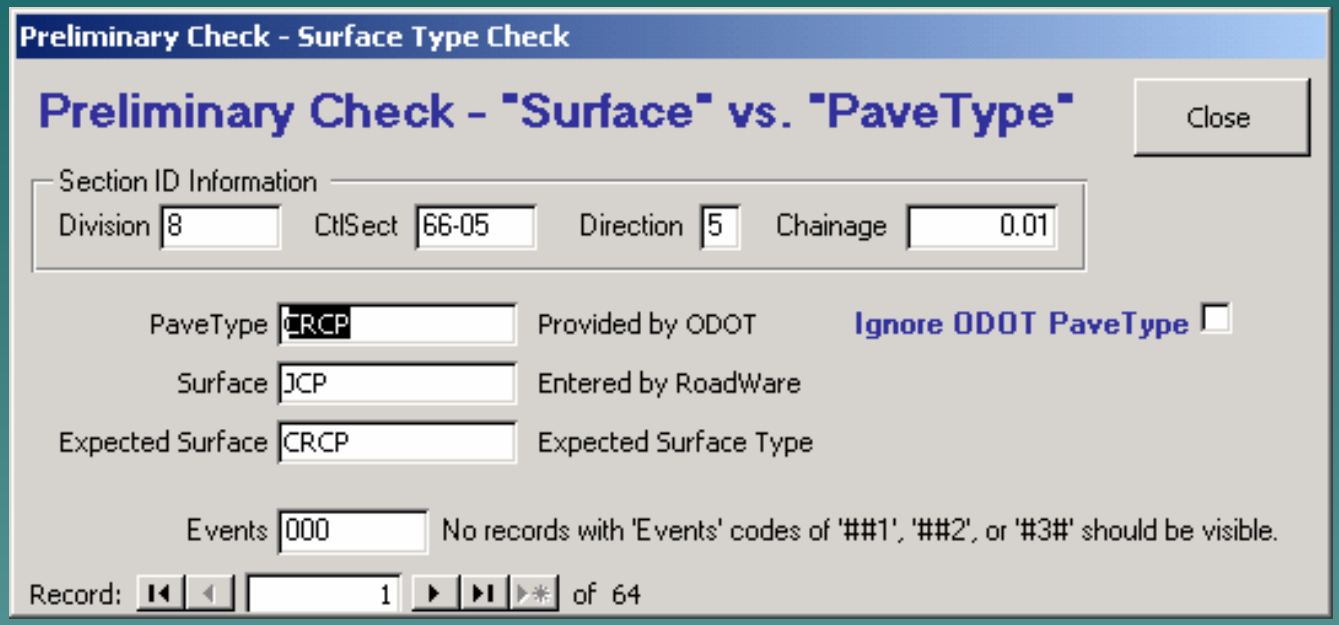


Check Beginning Point



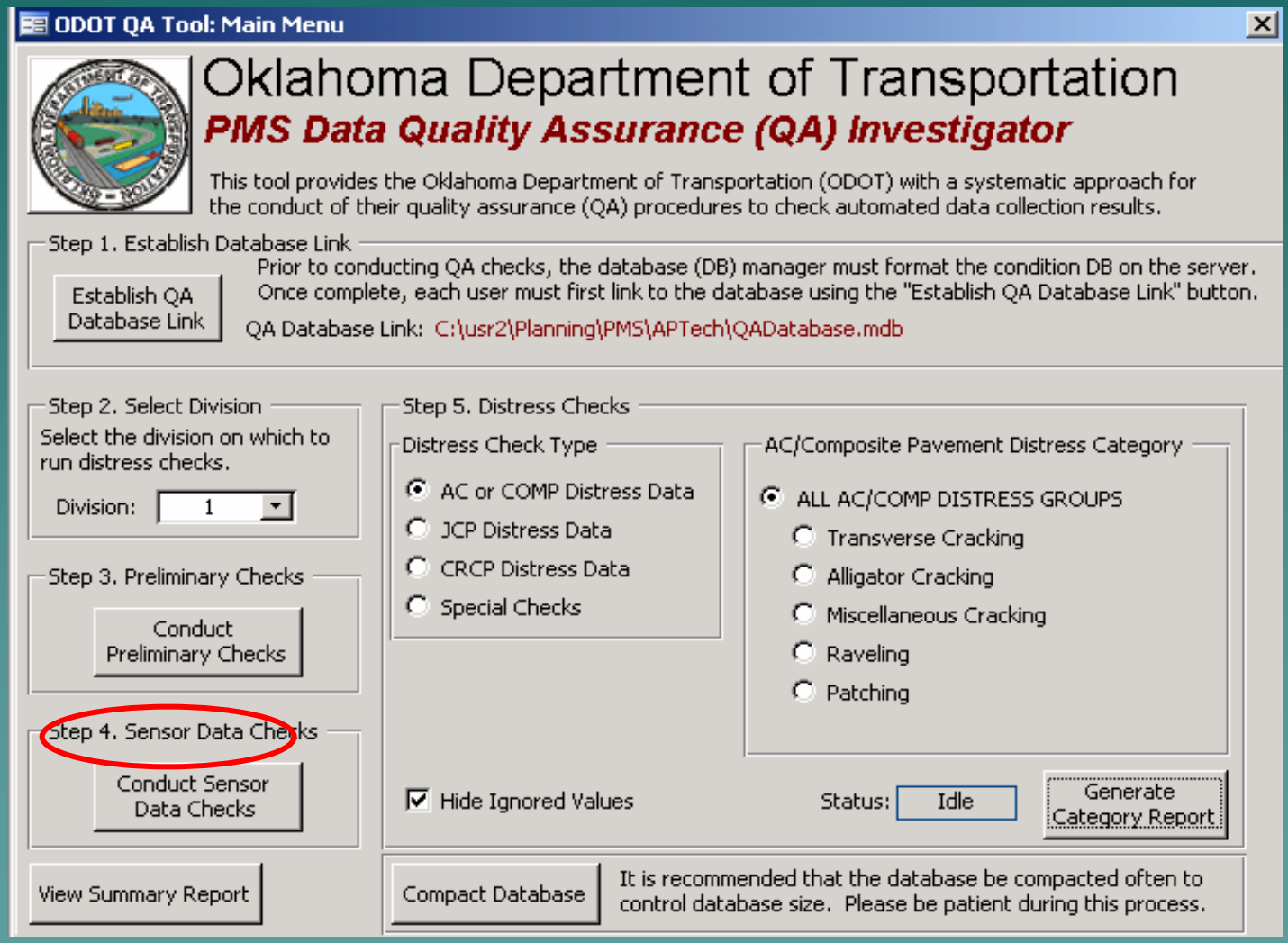
- Start with location
  - Check their beginning GPS vs. ours
  - Flag if off by more than 0.05 mi

What Type of Pavement?

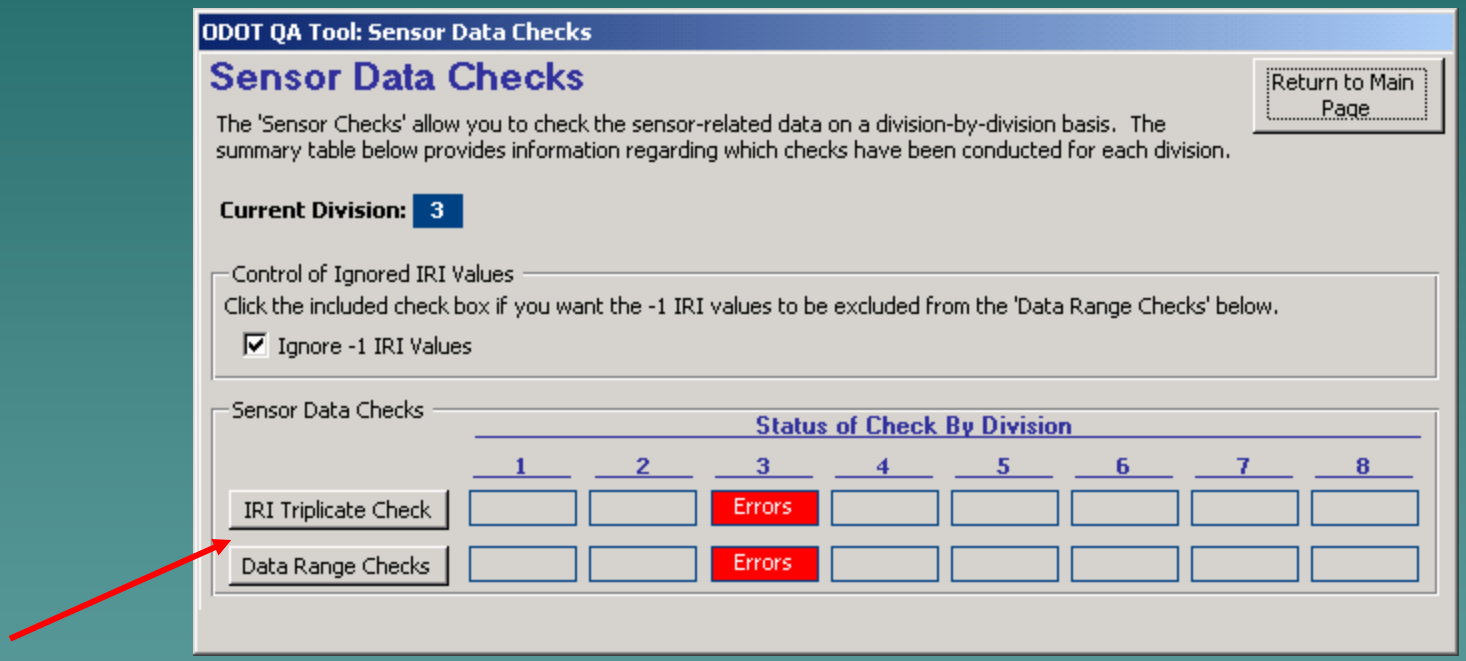


- Check Surface (theirs) vs. Pavetype (ours)
  - Resolve discrepancies with video

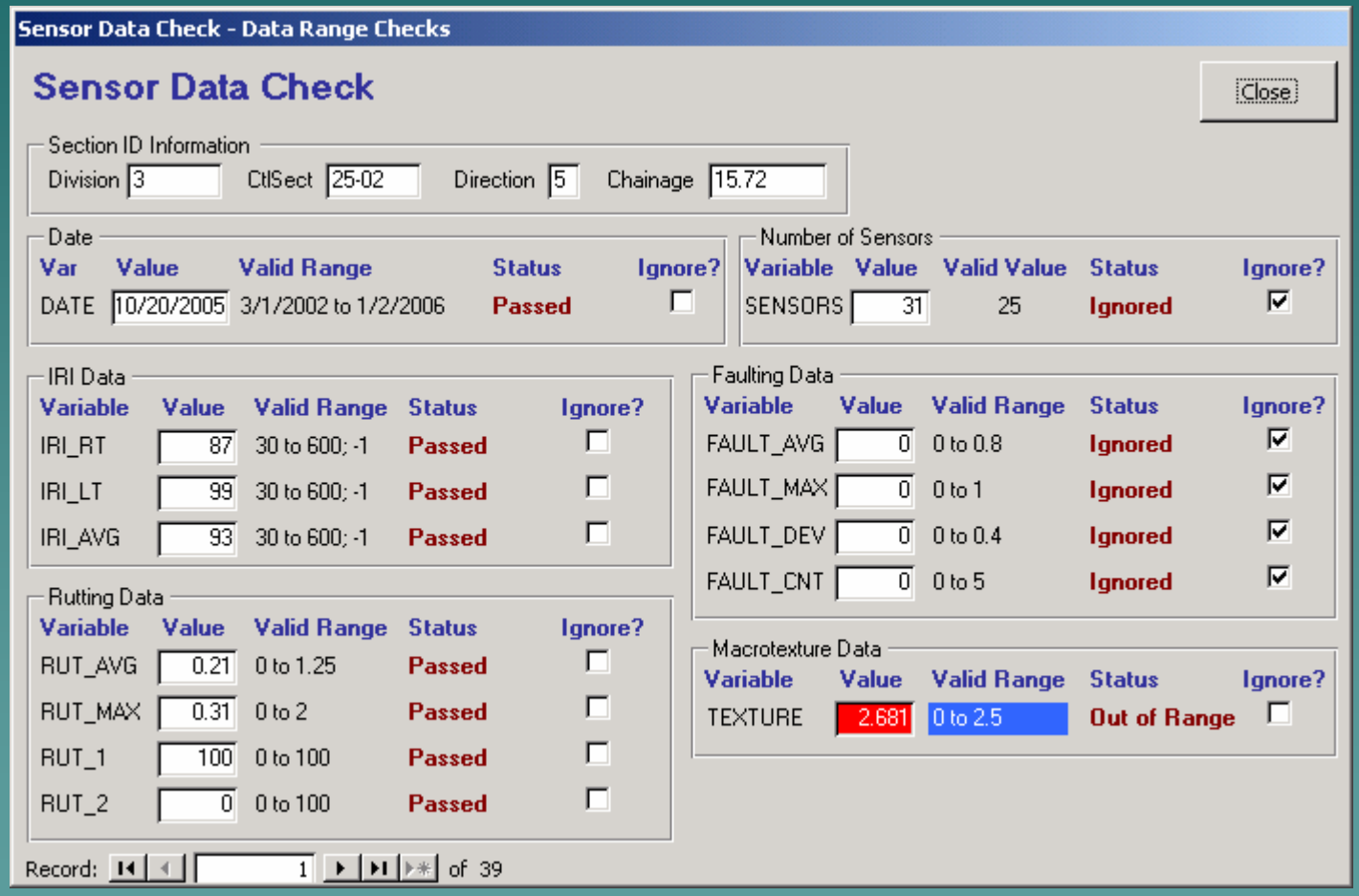
QA Tool – Run Sensor Checks



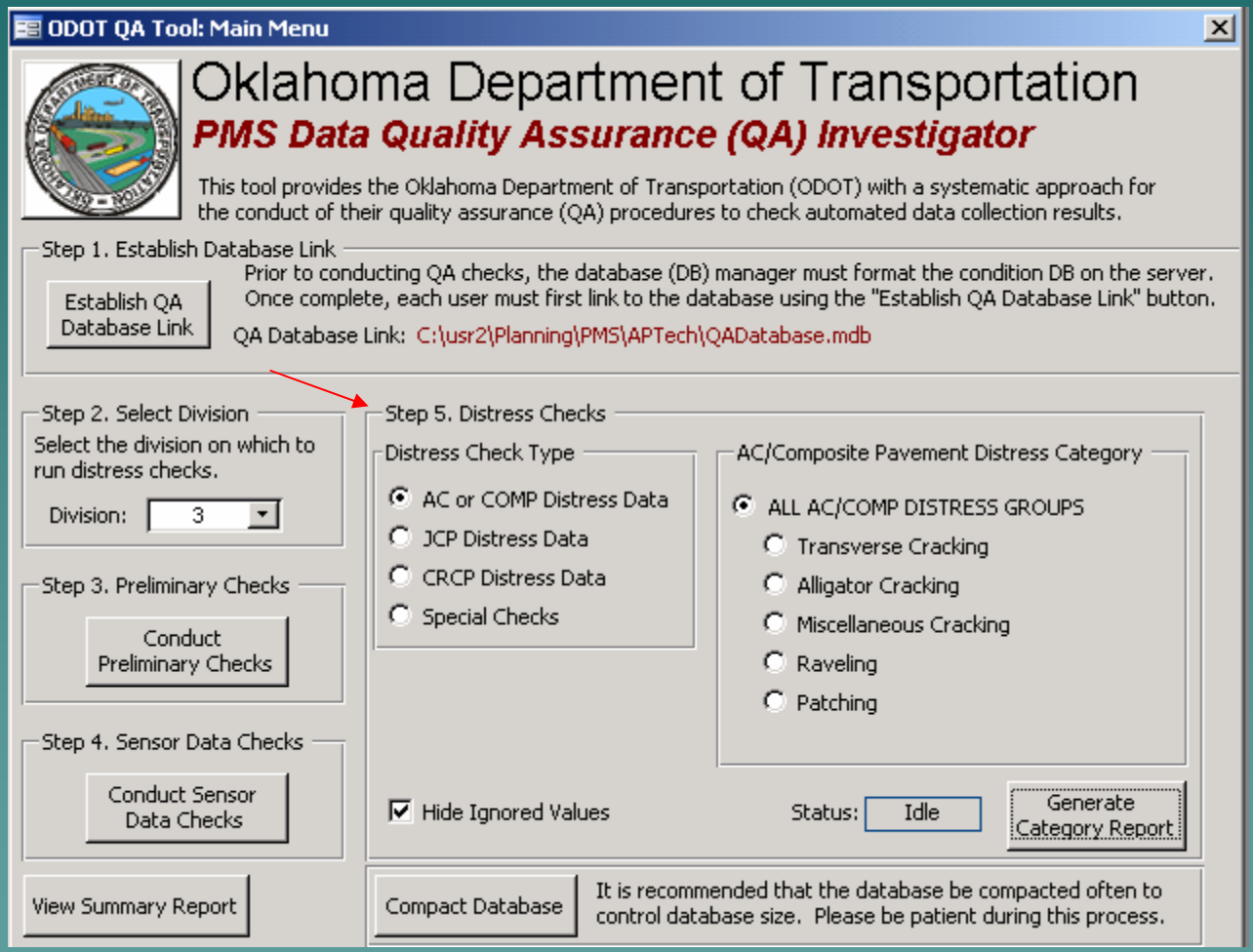
Sensor Data Checks



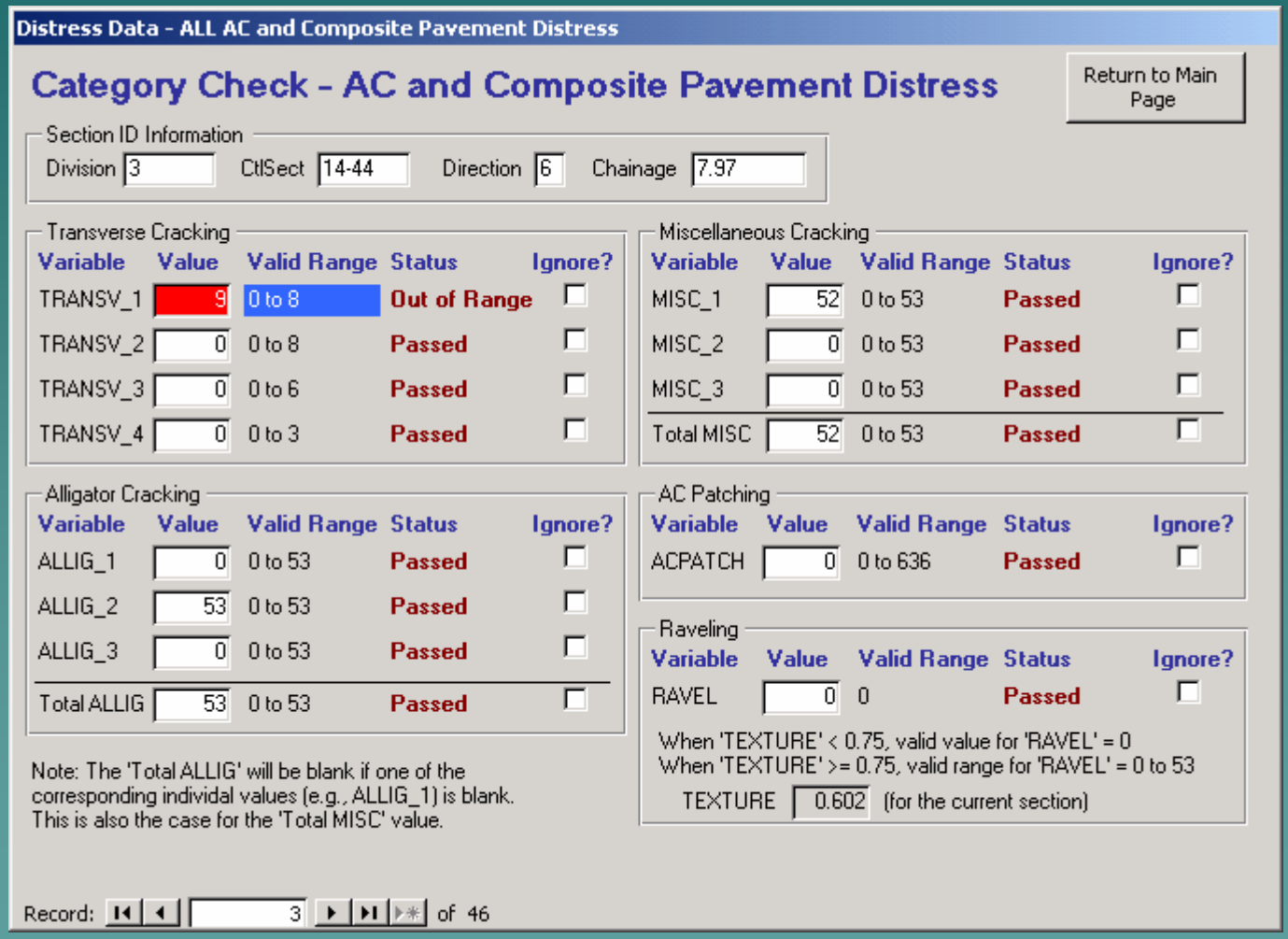
Sensor Data Checks



Distress Data Checks



Distress Data Checks



What's for the Future?

Based on aggregated data
Sum/Average to PMS sections

Logic Checks
e.g., If IRI>120 we should see some type of cracking

Year to Year Comparison
What is the expected change in values for two years

Check one side against the other on divided highways

Questions?

Contact Info

Justin Calvarese, P.E.

Oklahoma DOT

Planning & Research Division

Pavement Management Branch

Email: jcalvarese@odot.org

Phone: (405) 522-6714