Automated Pavement Data Collection – QC/QA Practices

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Presentation Topics

- Importance of Quality Data
- Overview of QC/QA Activities
- Field Activities
- Data Processing Activities
- Data Acceptance Activities
- QA Tools in Oklahoma

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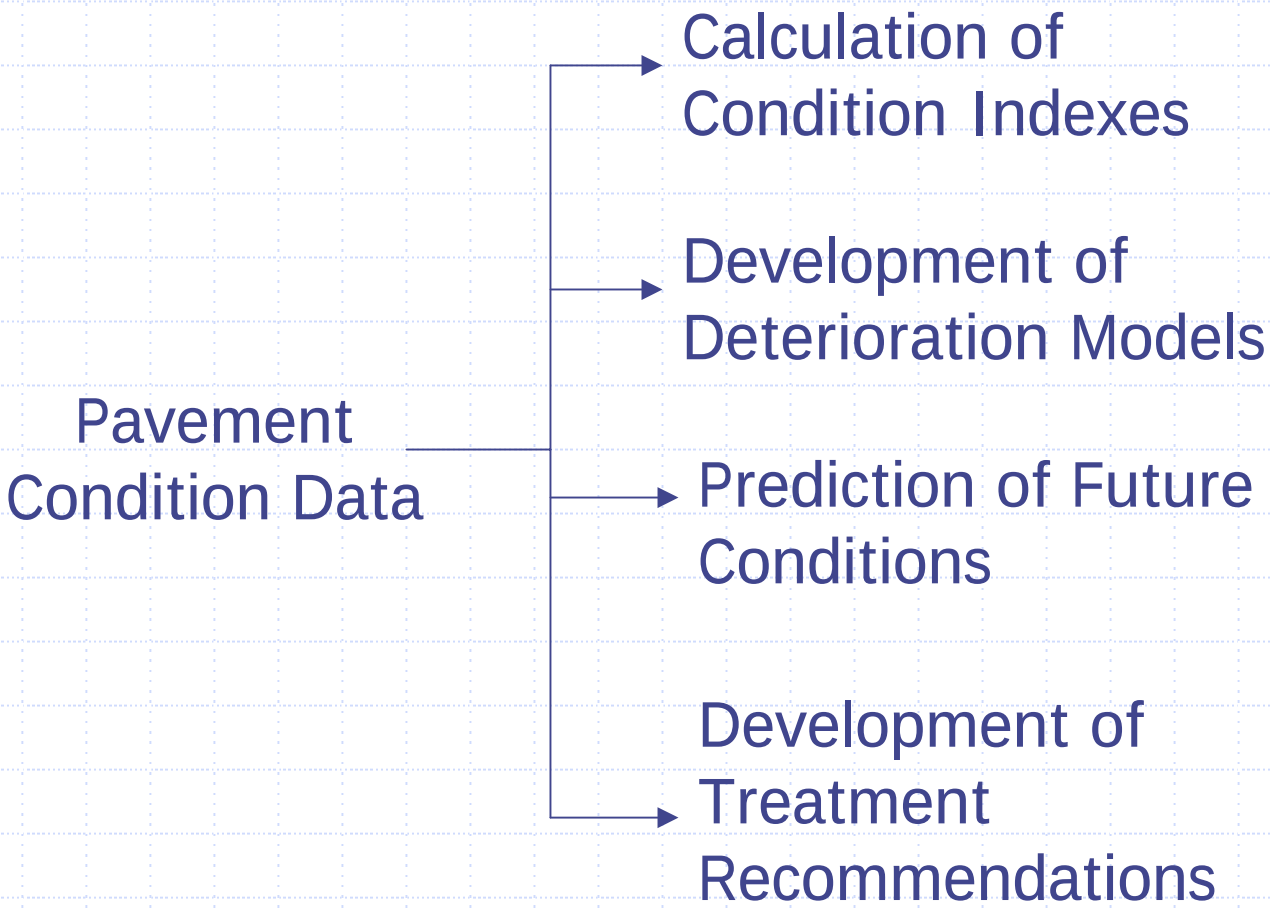
Importance of Quality Data



Recognizing Variability

- Variability in pavement conditions
- Procedures used to collect pavement condition information
  - Subjectivity
  - Automated versus manual
  - Sampling rate
- Rater consistency
- Other factors

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What Level of Variability is Acceptable?

- How will the data be used?
  - Network level versus project level
- What level of variability is reasonable?

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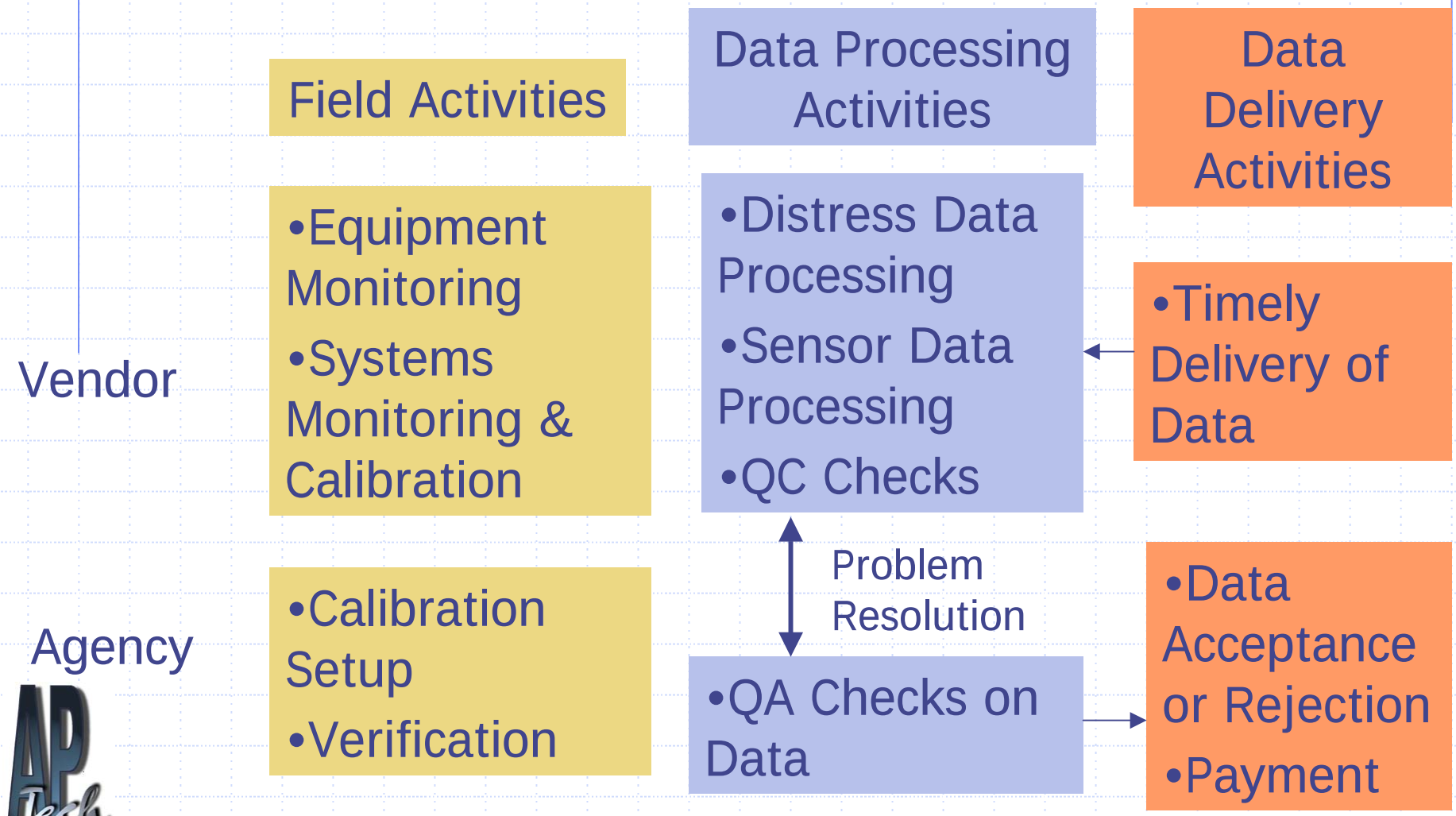
Overview of QC/QA Activities



Field Activities – Before Surveys

- Calibration of vendor to agency definitions
  - Calibration sites
- Test field procedures
  - Safety
  - Proper equipment operation
- Vendor must pass to proceed

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Establish Acceptability Requirements

DATA ELEMENT	REQUIRED MINIMUM ACCURACY	REQUIRED RESOLUTION (Measure to the Nearest)	REQUIRED MINIMUM REPEATABILITY
Rut Depth	+/- 0.08 inches compared to manual survey	0.01 inch	+/- 0.08 inches run to run for three repeat runs
International Roughness Index	+/- 5% compared to Rod & Level, Dipstick, or Class I profiler	1 in/mi	+/- 5% run to run for three repeat runs
Faulting	+/- 0.04 inches compared to manual survey	0.01 inch	+/- 0.04 inches run to run for three repeat runs

From Oklahoma DOT

Field Activities – During Surveys

- On-board verification and validation checks
  - Flag incorrect values
- Data continuity checks
  - Check for breaks in the data
  - Check for correct location references
- Periodic calibration checks

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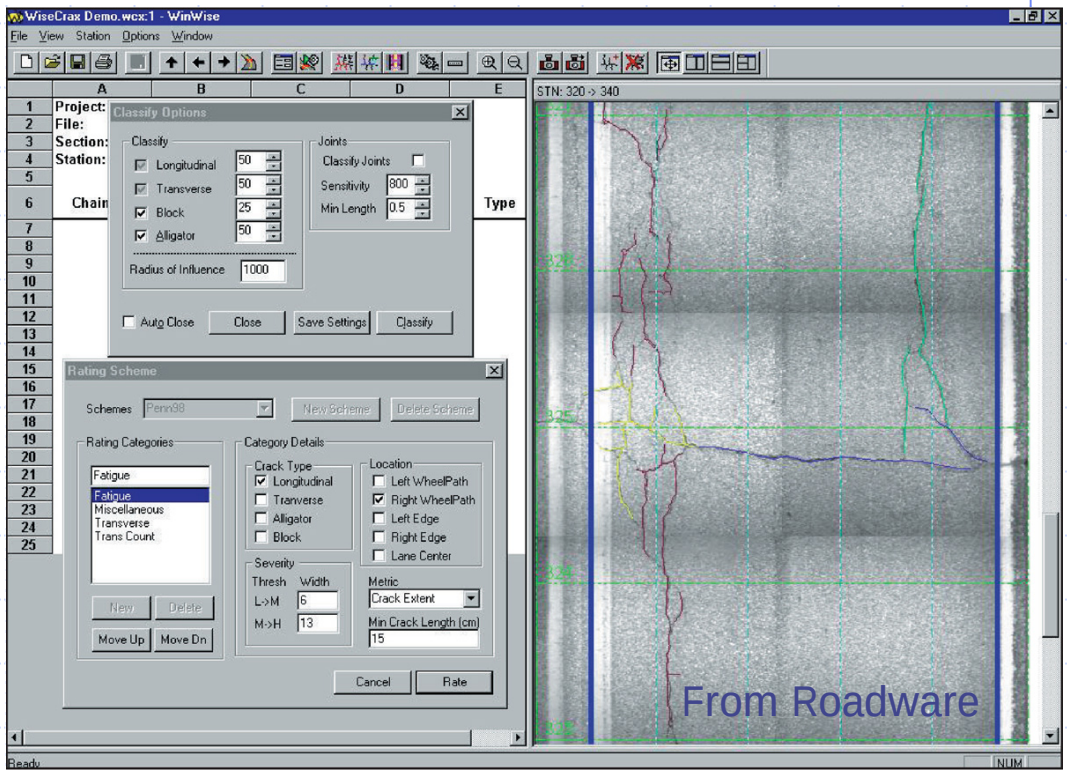
Data Processing Activities - Vendor

- Training on distress ID
- Distress identification
- Sensor processing
- QC checks



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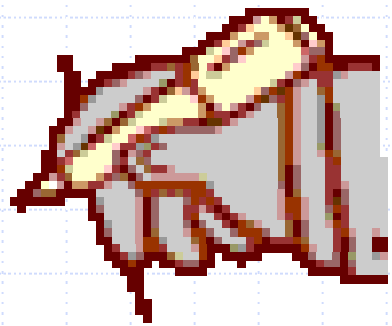
Data Processing Activities - Agency

- QA checks by agency
  - Sample size
- Resolution of differences with vendor



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Agency QA Checks

- Consistency
- Completeness
- Uniqueness of key fields
- Data reasonableness
- Acceptable data ranges

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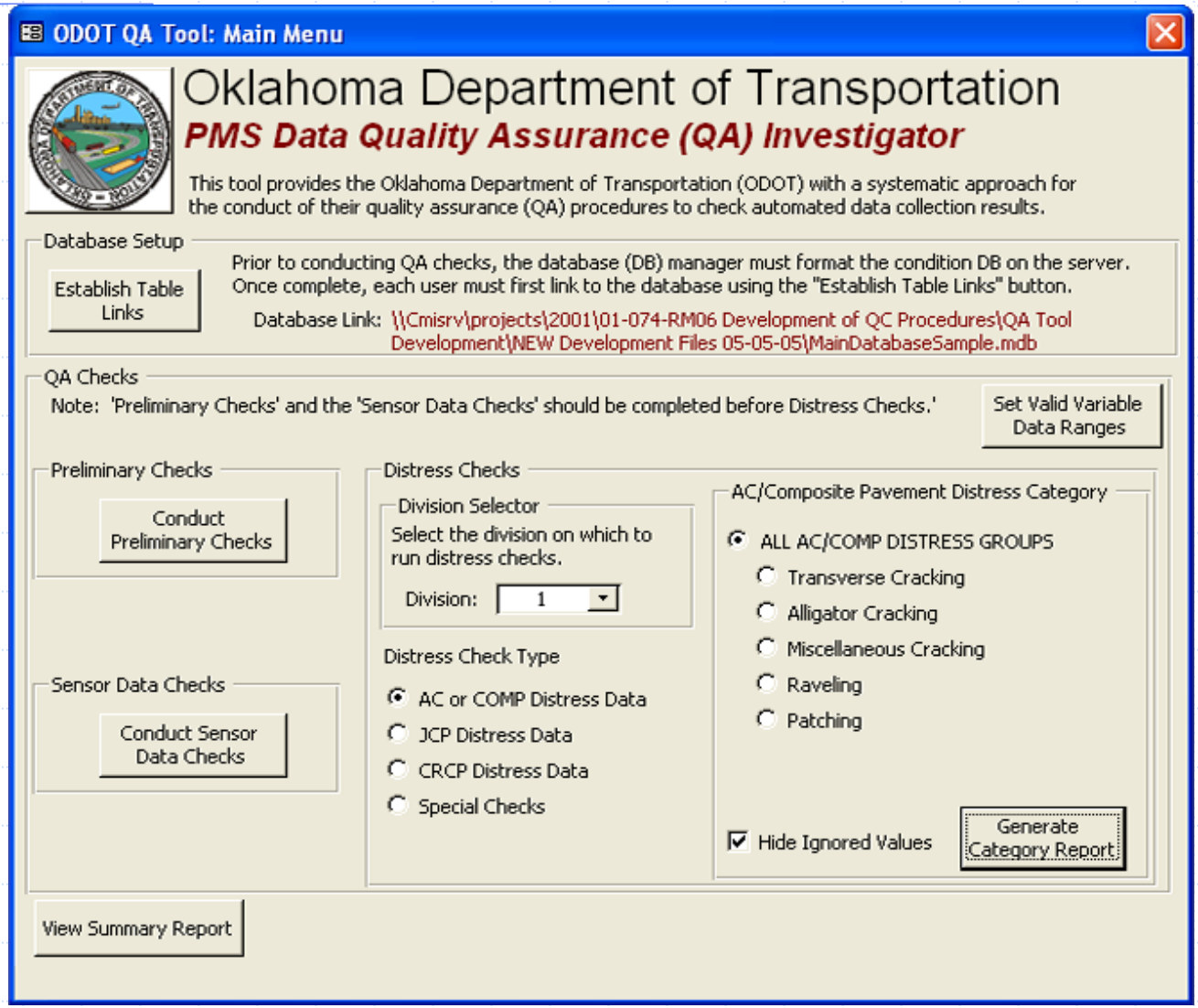
Data Delivery Activities

- Vendor is responsible for timely delivery of data in the proper format
- Agency is responsible for accepting or rejecting the data

Oklahoma DOT Pavement Data QA Tool



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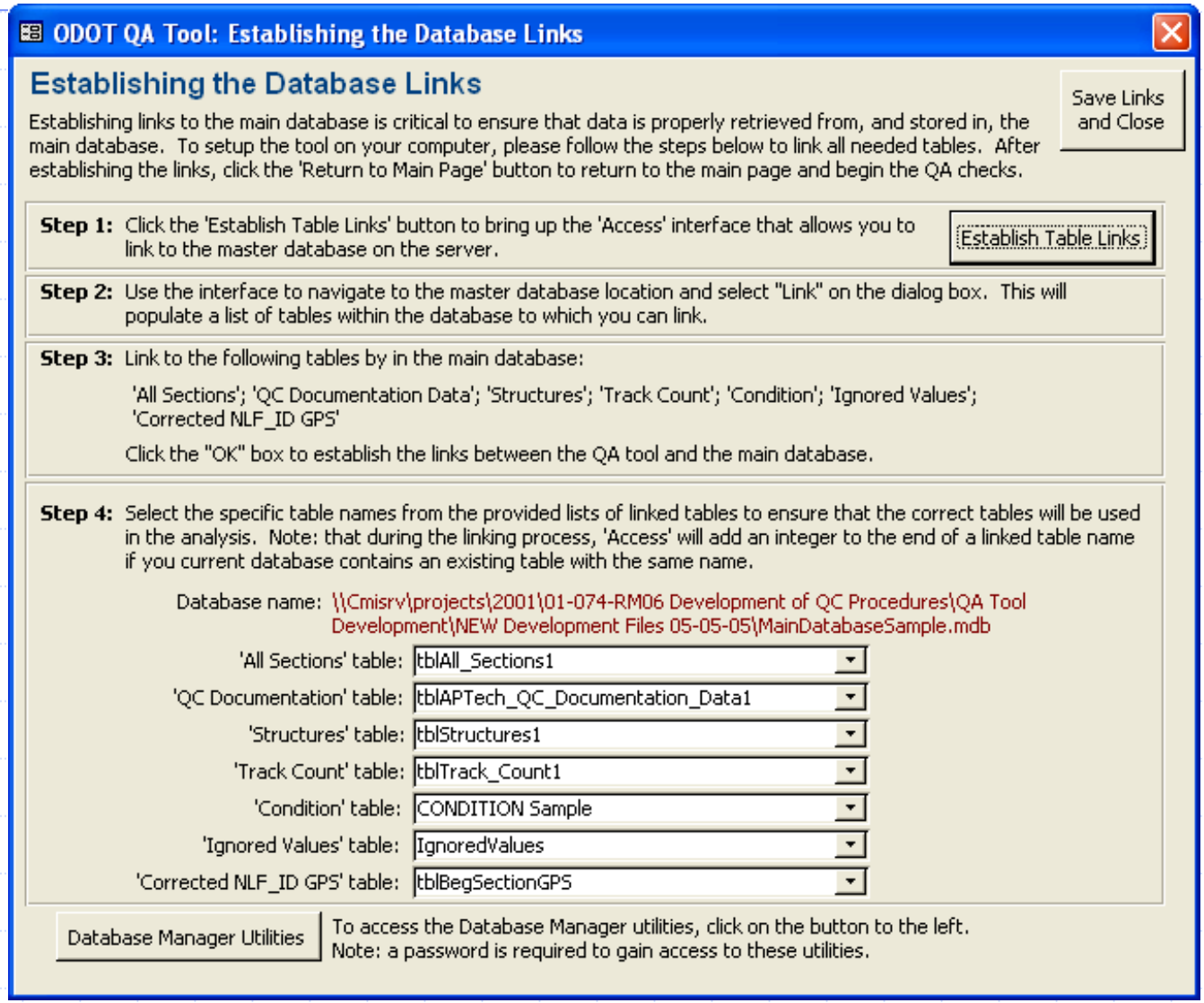
Database Linking



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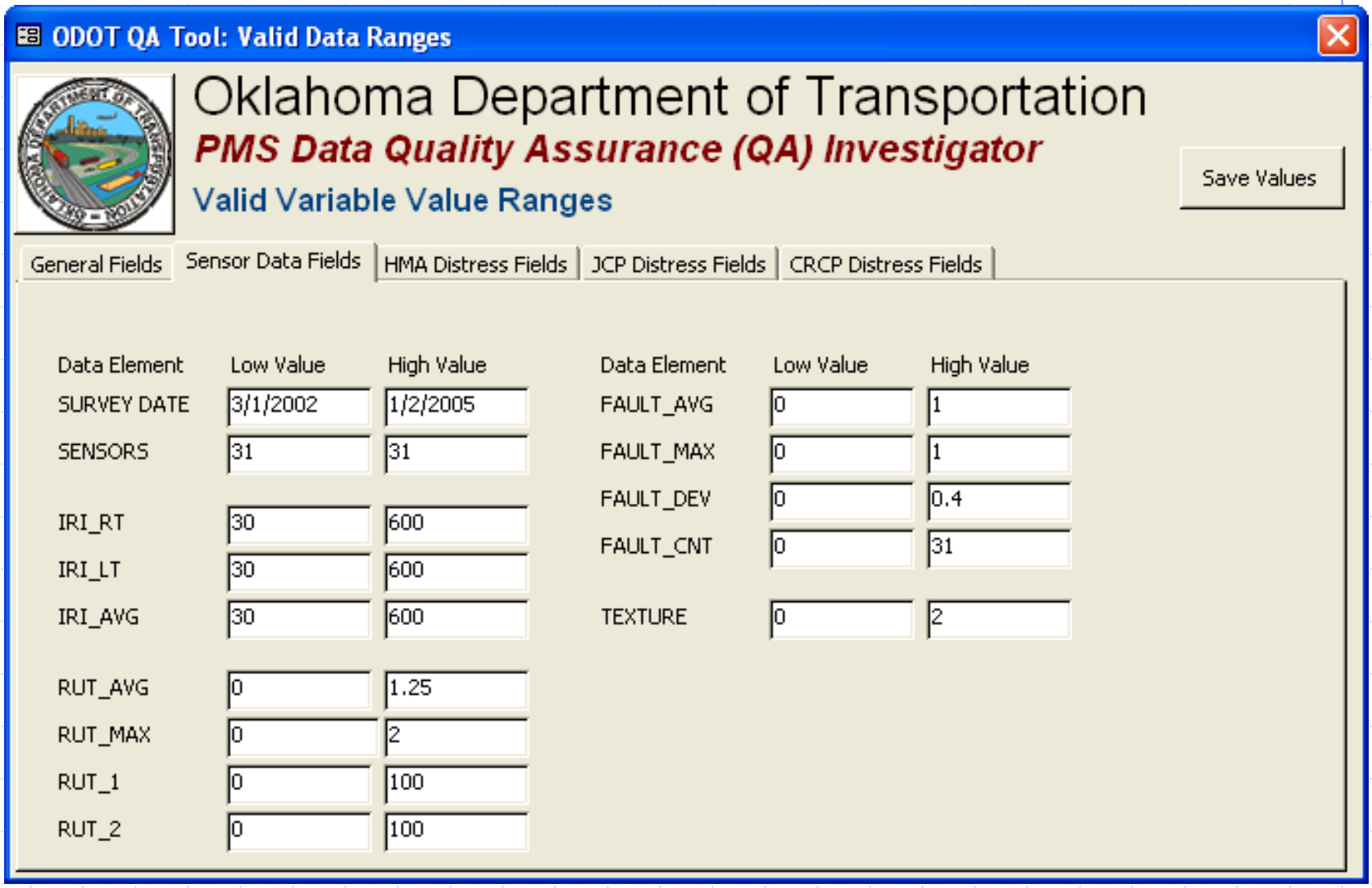
Setting Data Ranges



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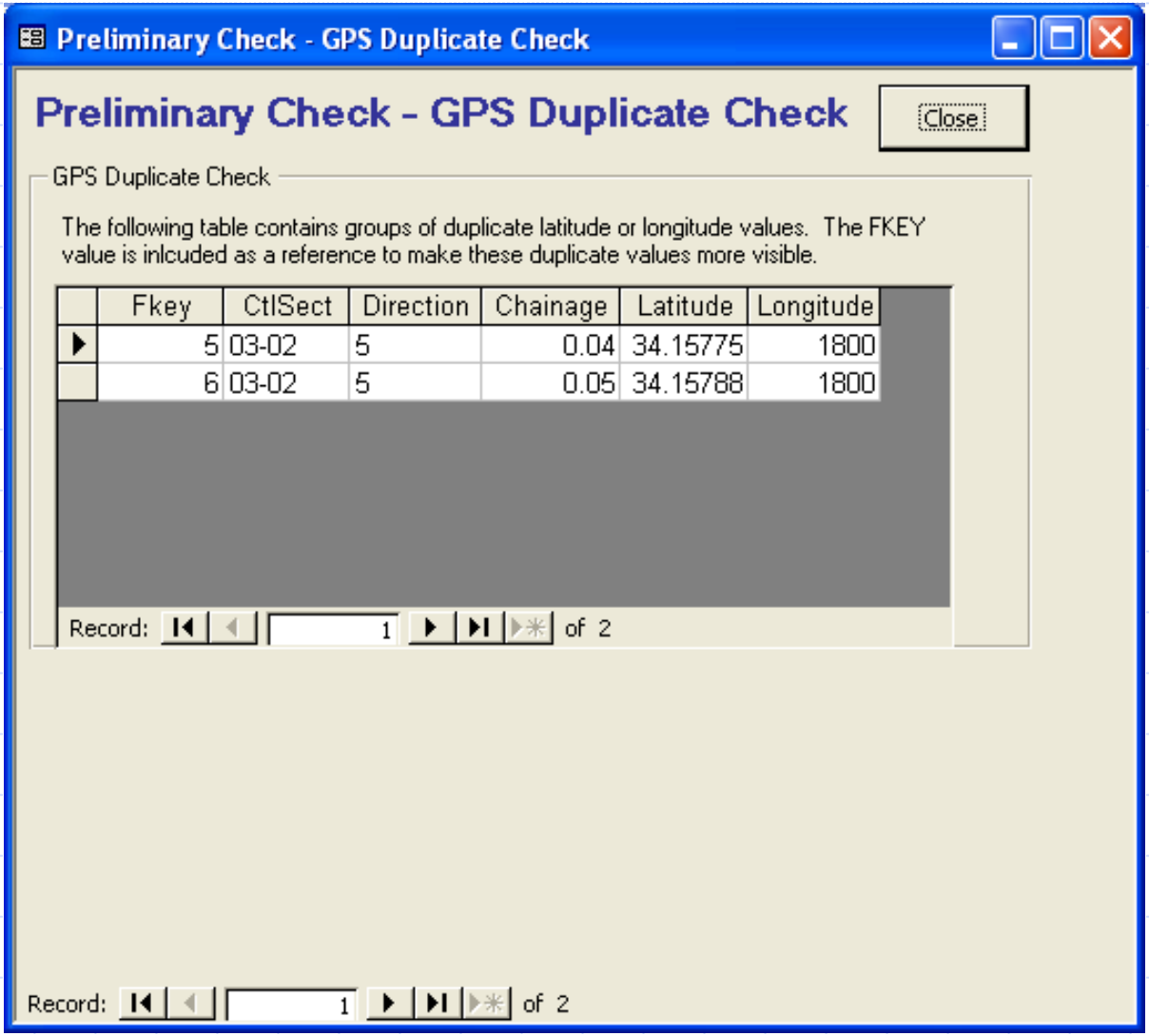
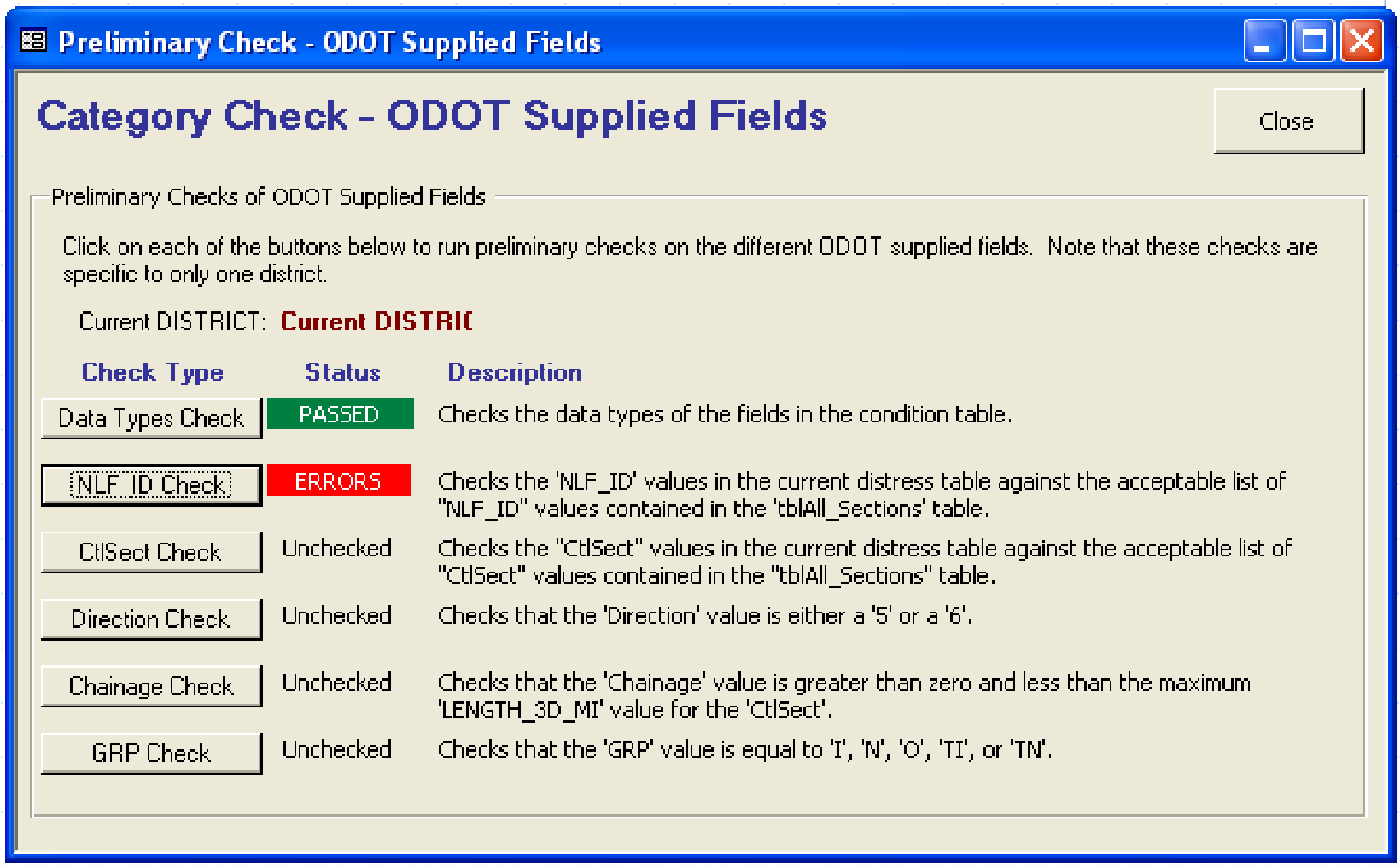
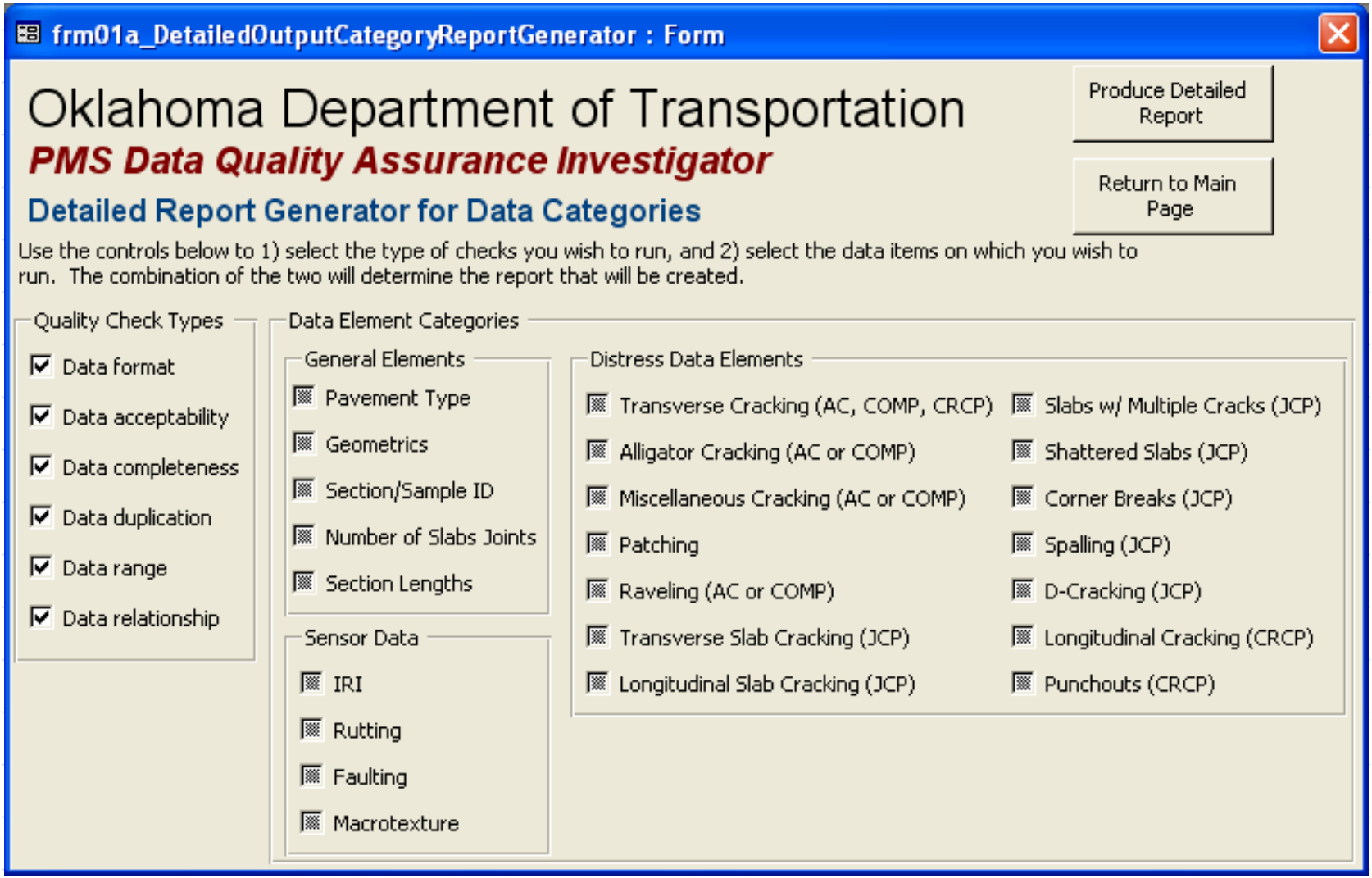
Checks for Duplicate Data



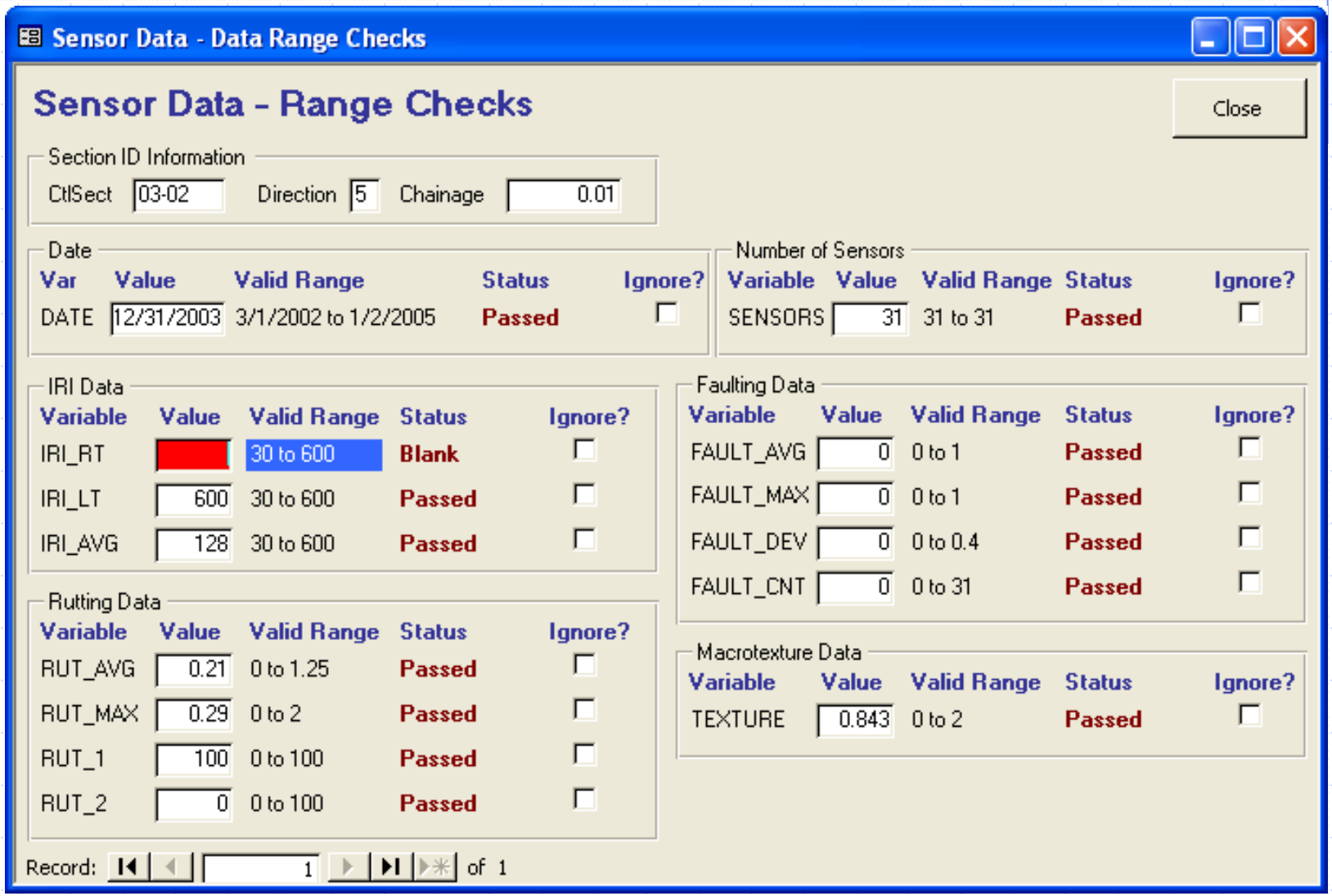
Checks of Supplied Data



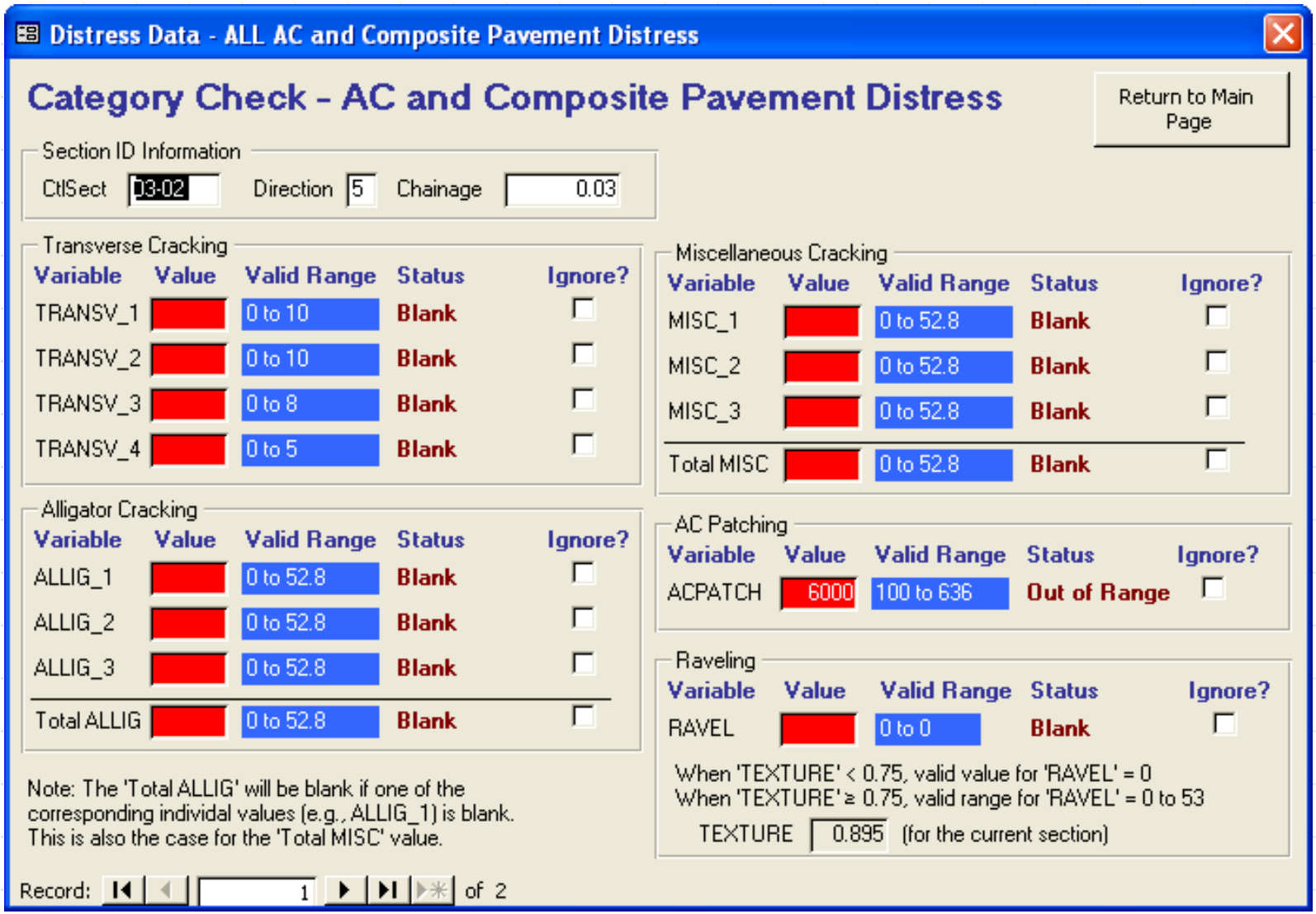
QA Interface



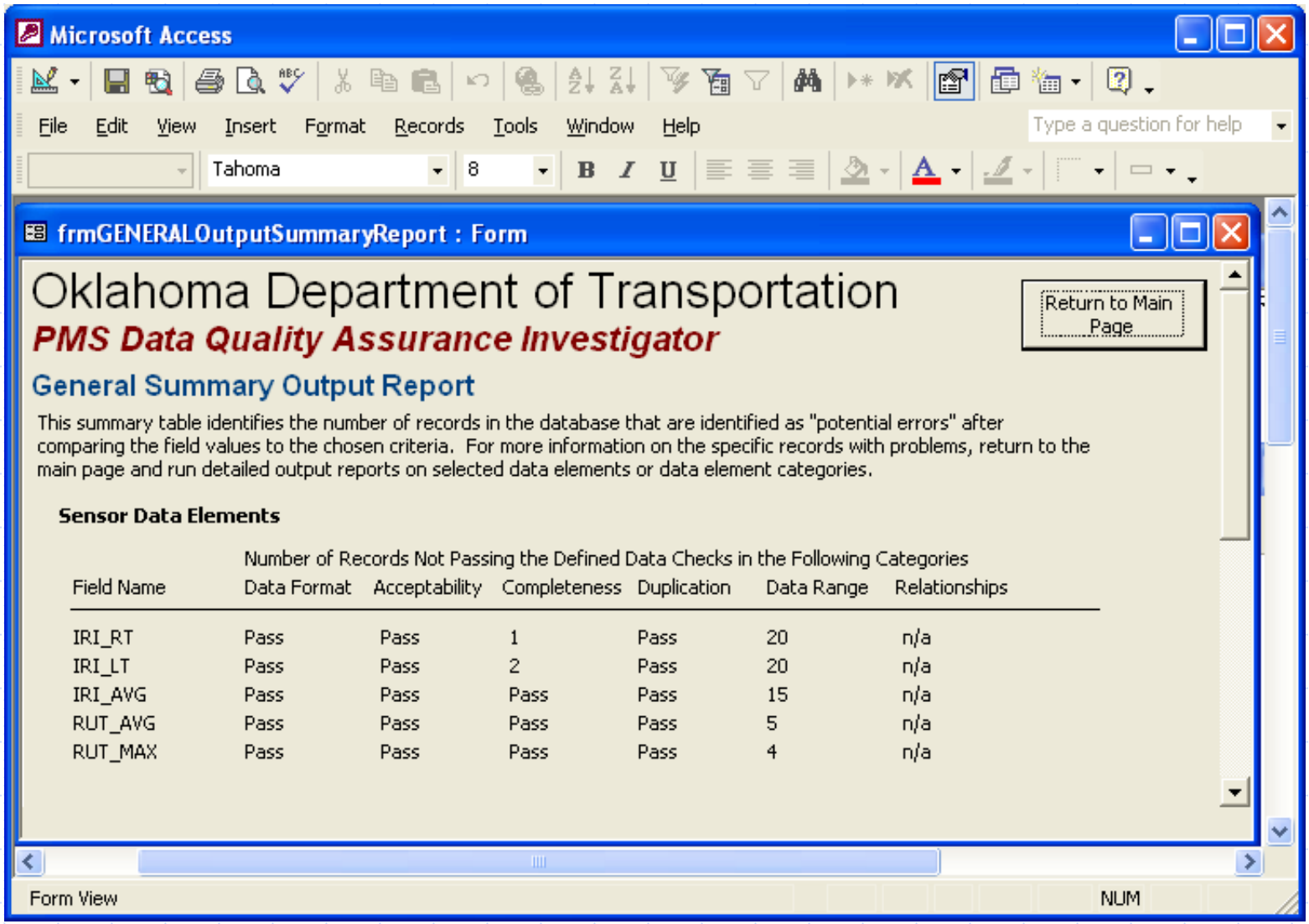
Sensor Data Range Checks



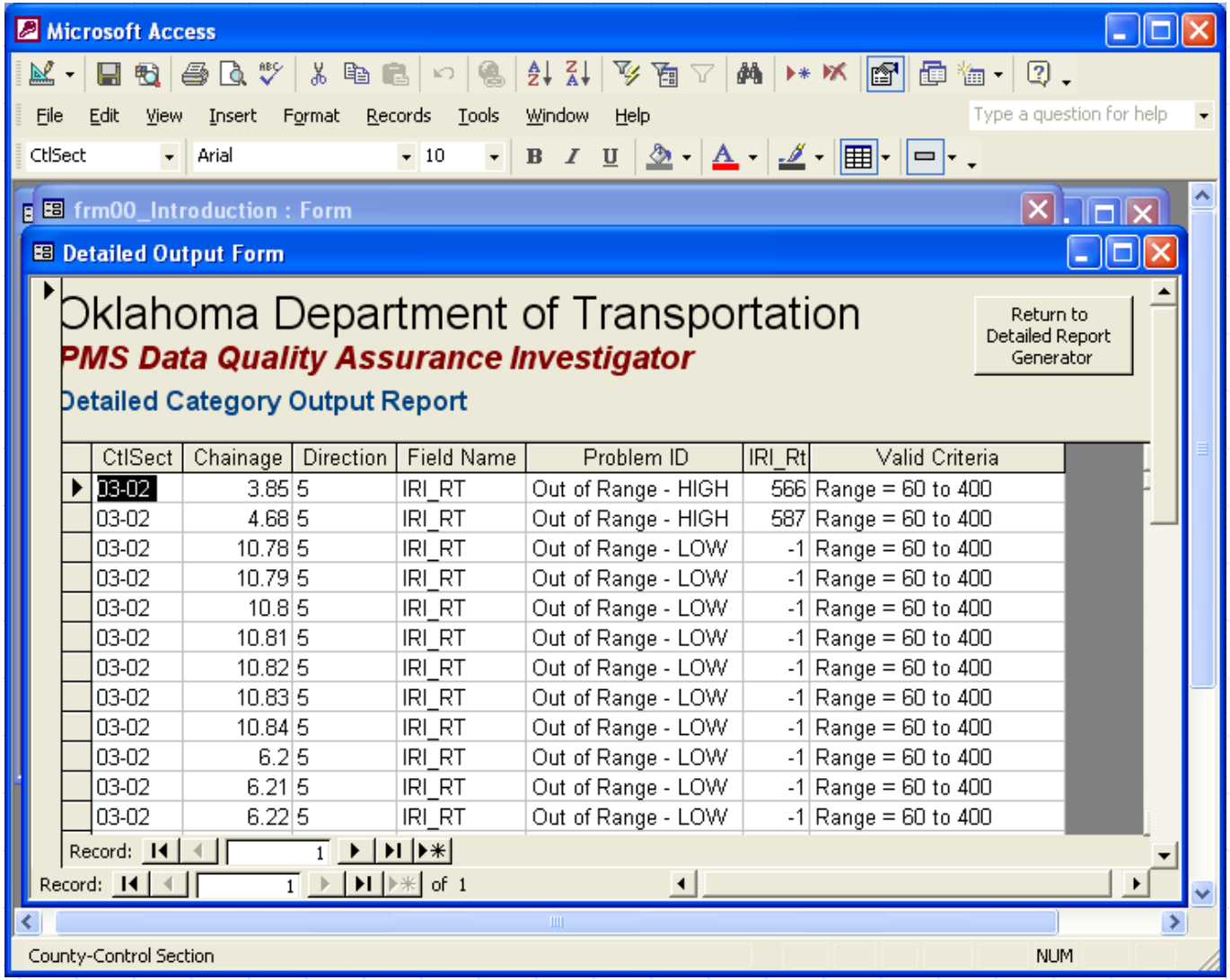
Distress Data Range Checks



Sensor Summary Report



Detailed Outputs



CtlSect	Chainage	Direction	Field Name	Problem ID	IRI_Rt	Valid Criteria
03-02	3.85	5	IRI_RT	Out of Range - HIGH	566	Range = 60 to 400
03-02	4.68	5	IRI_RT	Out of Range - HIGH	587	Range = 60 to 400
03-02	10.78	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.79	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.8	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.81	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.82	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.83	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	10.84	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	6.2	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	6.21	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400
03-02	6.22	5	IRI_RT	Out of Range - LOW	-1	Range = 60 to 400

Automated Data Collection QC/QA Recommendations

- Provide data quality requirements in the RFP – make vendor responsible for quality of data
- Verify that the vendor is following its QC plan
- Get distress data in batches
- Require an early submittal of the data
- Check any data delivered by vendor
- Avoid second party relationships to vendor

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