<u>Guideline for Checking Data into the Repository</u>

Premise:
- In general, information stored in the repository will be used to 1) build a model of the test, 2) predict the response to measured flow conditions, and 3) compare measured and predicted response. In order to perform these tasks, users will need access to detailed information about the test. The purpose of this guideline is to enumerate the required information.
- Donors can't spend a lot of time writing new documentation and reformatting datasets. As such, the repository will be based on existing documents, photos, video, datasets, etc. Supplemental information will be provided by the donor as required to meet the minimum standard defined by this guideline. The Donor may enter the requested information in the checklist or provide a specific reference to the location of the requested information in documentation.

Required Information:
1. General information about the experiment
   - Test name (i.e. identifier)
   - Experiment dates
   - Donor organization
   - Donor contact info (i.e. name & email)
   - Test facility and location
   - Experiment type (field/lab and full-scale/model-scale)
   - General descriptions of experiment and objectives
   - Citation for journal or conference papers describing the subject test and/or analysis of the data
   - Summary of known limitations of the overall experiment

2. Information about the experiment setup / test rig
   - Descriptions and specifications of the test rig
   - Test procedure
   - Drawings and photographs
   - Known limitation of the test rig

3. Information about the data acquisition system (DAS) and sensors (same for all tests)
   - Block diagram showing components & interconnection
   - Manufacturer & model number for each component
   - Specifications (or link) for each component
       a. Describe configuration parameters selected, if any
   - Time delay between DAS's and synchronization procedure (if any)
   - Time delay between channels for each analog to digital converter (ADC)
   - Anti-aliasing filtering (e.g. hardware filter type & corner frequency)
   - Other filtering (affecting raw data i.e. not including subsequent post-processing)
   - Optional – documentation of system / component verification tests

4. Information describing a common series of tests (repeat for each series)
   - Test specimen
       a. Geometry
             i. Length
            ii. Cross section (shape & dimensions)
       b. Structural properties
             i. Material
            ii. Mass density
           iii. Young's modulus
       c. Boundary conditions
       d. Applied Loads
             i. Initial top tension (value & location)

  ii. Net uplift due to buoyancy (value & location)
- e. Hydrodynamic properties
  - i. Effective diameter
  - ii. Roughness
  - iii. Submerged length
  - iv. Cd (assuming no motion - value & basis)
  - v. Suppression devices
    1. Device type
    2. General description of the device
    3. Critical device dimensions
    4. Coverage (coordinates)
    5. Device drawings
- f. Inertial properties
  - i. Mass per unit length of structural member (in air excluding instrumentation, contents, attachments, etc.)
  - ii. Mass per unit length (or discrete mass & location) of non-structural attachments (in air - e.g. buoyancy, fairings, strakes)
  - iii. Mass per unit length (or discrete mass & location) of instrumentation
  - iv. Mass per unit length of internal fluid
  - v. Mass per unit length (or discrete mass & location) of other entrapped fluid (e.g. inside fairing)
  - vi. Other discrete masses & locations
- g. Damping
  - i. How measured
  - ii. Conditions (e.g. in air, tensioned, etc.)
  - iii. Value & mode number
- h. Fluid properties
  - i. External
    1. Fluid type
    2. Weight density
    3. Viscosity
  - ii. Internal
    1. Fluid type
    2. Weight density
    3. Pressure
- i. Other optional information (for model validation)
  - i. Measured natural frequencies
  - ii. ……

- Run parameters
  - a. Run Id
  - b. Flow Profile (nominal)
    - i. Elevation
    - ii. Flow speed at corresponding elevation
- Channel definitions
  - a. A/D # / Channel number
  - b. Channel description
  - c. Sampling frequency (if different from item #3)
  - d. Gain
  - e. Filtering (if different from item #3)
    - i. Type
    - ii. Corner frequencies
    - iii. Phase matched?
  - f. Sensor
    - i. Sensor type (strain, acceleration or displacement)
    - ii. Sensor sensitivity
    - iii. Other sensor information if available (Brand name, model number, etc)

     iv. Location

     v. Orientation

- Data
    a. Raw data
        i. Format or provide code stub to read data
        ii. Units
    b. Processed data (e.g. to compensate for calibration problems, to eliminate noise, to manually synchronize between channels, to apply an overall correction factor)
        i. Format or provide code stub to read data
        ii. Units
        iii. Detailed description of processing algorithm
    c. Derived data (auto or cross spectrum, statistics, etc)
        i. Format or provide code stub to read data
        ii. Units
        iii. Detailed description of processing algorithm
- Known limitation of the data (a failure channel, etc)