



Instrument Readiness Review Request (IRRR)

The Instrument Readiness Review Request has been designed to gather the information needed to prepare for the deployment of an instrument at an ARM site to insure that all instrument requirements can be properly accommodated by Site Operations and the Data System staff. Please complete one Instrument Readiness Review Request per instrument, answering all questions as completely as possible. If you feel a question is not applicable to your deployment, please write "NA" – do not leave any questions blank. Site Operations and Data System personnel will review this information and will contact you to discuss the requested support. When you are ready to upload the form, please go to http://engineering.arm.gov/engr/task/instrument_support/

Cautionary Note: Any change or substitution to the information described in this Instrument Readiness Review Request will require further evaluation by Site Operations before the instrument may be energized and operated, possibly delaying the start of your field campaign.

1. General Information	
Instrument Name:	AERI, Atmospheric Emitted Radiance Interferometer
Instrument Mentor Name:	Joe Taylor / Denny Hackel AERI mentor will be changing from Dave Turner to Joe Taylor per a discussion with Doug Sisterson
Instrument Developer Name:	ABB Bomem
Affiliation:	University of Wisconsin
Mentor Address:	1225 W. Dayton St. Madison, WI 53706
Mentor Phone Number:	608-263-4494
Fax Number:	608-262-5974
Email address:	joet@ssec.wisc.edu , dennyh@ssec.wisc.edu
Related BCR Number:	None
Related ECO/EWO Number:	751 (NSA) 764 (TWP, AMF) 13092 (SGP)
Brief description of instrument and measurements:	The AERI instrument is an interferometer that measures downwelling (zenith field of view) infrared spectrally resolved radiances. The AERI is self-calibrated to within 1% ambient
Type of deployment: <ul style="list-style-type: none"> • Field Campaign (Provide campaign name) • ACRF instrument development/evaluation • New, operational ARM instrument • Non-IOP guest instrument • IOP Instrument 	New, operational instrument
If fixed deployment, which ARM site where instrument will be deployed:	SGP, Darwin, Manus, AMF, Barrow
If mobile deployment, is this permanent part of an AMF?	Yes
Brief description of your operations plan:	Runs continuously

Will the measurements from the instrument become a production ARM datastream?	Yes
Does the instrument conform to the Vendor specifications? Vendor Specifications	Yes
Will the data be collected by ARM Data system?	Yes
Will the data be ingested by the ARM Data system?	Yes
Will the data be passed to ARCHIVE through the ARM Data system?	Yes
Are any instruments currently installed on-site deemed critical to your deployment or experiment?	No
CAUTIONARY NOTE FOR NORTH SLOPE OF ALASKA DEPLOYMENTS: <ul style="list-style-type: none"> Lodging at the ARCF Duplex is on a first-come, first-served basis. Do not automatically assume that your stay can be accommodated. Vehicle use at the NSA is limited, and ACRF Site Operations activities take priority. Do not automatically assume that ACRF vehicles will be available for your use. 	

2. Deployment/Removal Support Needs	
Planned date(s) of deployment. Please indicate your planned arrival and departure dates (Reminder: A Site Access Request must be submitted and approved for each person requiring access to an ARM site to support this instrument deployment http://www.db.arm.gov/SARS/)	3 units are scheduled to be delivered by ABB-Bomem to SGP by August 16 th . 3 units are scheduled to be delivered by ABB-Bomem to SGP by September 24 th . Delivery will be followed by a checkout period that will be a minimum of one week. The first 3 units will go to Manus, Darwin and Barrow (assuming one extended range instrument is provided in first 3 units delivered). The 3 units in the second delivery will be deployed to SGP, AMF and Spare.
How will your equipment be shipped/transported to the site? (e.g. Yellow Freight, FedEx, private car/truck, etc)	ABB-Bomem ships instruments using DB Schenker. Our current assumption is that this will be the delivery method to SGP. We are expecting that ASR will provide shipping thereafter.
Size and weight of equipment?	See ARRA_AERI_instrument.pdf for exact measurements. Attached to EWOs mentioned in General Information. Front-end & enclosure: 133 lbs Back-end: 227 lbs
Will your equipment need to be stored prior to set up or subsequent to tear down?	Yes.

<p>Will your shipping containers need to be stored during the deployment? If yes, please indicate number and size</p>	<p>Yes, 2 travel boxes (36”(w) x 54”(l) x 62”(h) along with the pallet they were shipped on & a smaller equipment case. The travel boxes will also contain a dolly / cart that the instrument is shipped on. See sizes below.</p> <p>Total weight packed for shipping. 1 - 36”(w) x 54”(l) x 62”(h): 428 lbs 1 - 36”(w) x 54”(l) x 62”(h): 494 lbs 1 - 24”(w) x 32”(l) x 19”(h): 58 lbs</p> <p>Weight of dolly / cart & travel box only for storage: 1 - 36”(w) x 54”(l) x 62”(h): 295 lbs 1 - 36”(w) x 54”(l) x 62”(h): 556 lbs 1 - 24”(w) x 32”(l) x 19”(h)</p>
<p>Will you need our assistance to unload, load, or transport your equipment on-site?</p>	<p>Yes, 4 people to lift instrument off pallet. After testing 4 people will be needed to lift instrument into place.</p>
<p>Will you need any special services for unloading/loading your equipment? If so, arrangements for crane, forklift or other special services must be made at least 4 weeks in advance.</p>	<p>No.</p>
<p>What is the desired location for your instrument? Maps are available at:</p> <ul style="list-style-type: none"> • SGP: http://www.arm.gov/sites/sgp.stm • NSA: http://www.arm.gov/sites/nsa.stm • TWP: http://www.arm.gov/sites/twp.stm • AMF: http://www.arm.gov/sites/amf.stm 	<p>AMF: AOS trailer SGP: Optical trailer Barrow: Connex Manus: New container Darwin: Shelter of current AERI</p>
<p>What is the field of view (FOV) of your equipment?</p> <ul style="list-style-type: none"> • hemispheric FOV • narrow FOV – zenith pointing • narrow FOV – solar tracking • narrow FOV – scanning (describe) • other (describe) 	<p>Narrow FOV (< 50 milliradian full angle) – zenith pointing</p>
<p>Does your equipment require a specific alignment?</p>	<p>Must have clear Zenith FOV, must not see shelter’s side.</p>
<p>What fetch or surrounding terrain/land use do you require?</p>	<p>None</p>
<p>What other instruments does your equipment need to be co-located with?</p>	<p>None</p>
<p>Could your equipment generate or be susceptible to interference (radio frequency, electromagnetic, acoustic, aerodynamic, etc) with ARM or other guest instruments?</p>	<p>During nominal operations our equipment is not expected to generate or be susceptible to interference with other instruments.</p>
<p>Are there any other location considerations?</p>	<p>The instrument will need to be placed high enough to avoid height of accumulated snow in the winter.</p>

Do you intend to mount your equipment on an existing concrete pad, platform, tower, stand, solar tracker, etc?	Units will be mounted in thru-wall configuration in container/trailer with instrument located as near to container/trailer ceiling as possible. The instrument has a 40.25" height if back-end protective cover is in use. If back-end cover is not used the instrument height is 34.25" and it can be mounted with that clearance from the ceiling.
Do you intend to provide your own platform, tower, stand, solar tracker, etc?	We do not intend on providing a platform/shelf. A platform/shelf will have to be provided for the instrument to sit on. Please see the ARRA_AERI_instrument.pdf for instrument dimensions for building the shelf.
Will you need assistance from Site personnel to set up, mount, or install your equipment?	We will need assistance lifting the instrument onto the platform/shelf that it will operate on.
Will you need shelter for your equipment?	Yes
Will you be providing a shelter for your equipment?	Partial – the front-end has it's own external enclosure. The back-end will need to be in a trailer or container.
Will you need any utility support? (water, etc.)	No
Are there any other deployment or removal support needs?	Container/trailer thru-wall holes are required for tubes that connect the front-end to the back-end. See ARRA_AERI_instrument.pdf attached to EWOs mentioned in the General Information for location of the three –7- inch holes.

3. Data Connections	
Do you require connection(s) to ARM site networks?	Yes
How many connections do you require?	1
What is the planned method of data delivery to the data system? (ftp, serial, etc.)	ftp or rsync (same as current method)
What network services do you require? (ssh/scp (secure shell/secure copy), ftp (file transfer), telnet (remote terminal), http (web server), smtp (email), etc.) For all non-IOP instruments, we will be installing ARM approved FTP and Time client servers and pre-configured operating systems when applicable. In some instances, instrument PCs can be virtualized, eliminating the need for a physical computer. For more information, please contact Cory Stuart at cstuart@anl.gov.	ssh,scp, rsync, radmin, ftp
Do you want the ARM Core (pre-configured) Software installed on your windows PC?	No

What volume of data do you plan to transfer? (Note – If the instrument is an IOP instrument, large data transfer volumes will need to be scheduled so as not to interfere with ARM data transfers)	Approximately 900MB a day (same as current AERIs)
Will you be connecting computers to the ARM network?	Yes
What type of computer(s) and what operating system and version (e.g. Sun OS 5.5.1, Mac OS 10.2.6, Windows XP, Redhat Linux 9.0) do they use?	Windows XP SP2. ABB-Bomem will have to be consulted if there is a desire to upgrade to SP3.
What virus protection software is installed in your computer(s)?	None
Before any of your computers will be connected to the network, you must submit each of them to our technicians for a virus scan. Do you consent to this? Note: This is to ensure that the systems are secure and do not pose risks to the ARM security posture.	Yes

4. Data/Meta-data information	
What will the data format be?	Same as current AERIs
What will the data size be?	Same as current AERIs
What will the data name be?	Same as current AERIs
What is the expected daily volume of data?	Same as current AERIs
Will data from the instrument be available to the data system hourly?*	Same as current AERIs
What is the location of the data on the instrument?	Same as current AERIs
Are the data files documented in the related ECO?	Yes Ingest: EWO – 13305, 13313 Collections: EWO – 13304, 13312
What is file naming convention?	Same as current AERIs
What is data/meta-data file structure?	Same as current AERIs
Have sample data files been provided to the collection and ingest developers?	Yes
Please provide a brief description of each instrument system to be associated with an IP address:	Computer that collects the data also provides data on the network for collection.
Please provide any information you feel is necessary to support your deployment.	None.
Are all related ECOs and EWOs up-to-date?	Yes

5. Electrical Requirements	
Will you need to connect to site AC power? If yes, please answer the following for EACH LOAD you wish to connect to the site AC power. In the event your equipment is contained in a single rack, enclosure, or trailer, that is fed by a single power cord, it is only necessary to provide the details of that main power feed.	Yes
What is the voltage of each load?	120 to 220 V
What is the frequency of each load?	50 Hz or 60 Hz
What is the amperage of each load?	The Back-End will peak at 5 A on start-up and run around 3.3 A for about a minute. Then It will drain 2.9-3.0 A at steady state. The Back-end is rated at 600 VA

	All tests run at 120.0V with a calibrated generator.
What is the phase of each load?	Single
Are your AC power requirements other than 120 Volt AC, 60Hz, single phase (NEMA plug type 5-15P or 5-20P)? If yes, please provide the NEMA plug type(s).	No
Has your AC-powered equipment been inspected and certified as safe by a Nationally Recognized Testing Laboratory (NRTL), such as Underwriters Laboratories?	Yes, inspected by CSA International for CSA Standard C22.2 No 0, 0.4 , 14 as specified in guide SPE1000-09.
If the equipment has not been listed by a Nationally Recognized Testing Laboratory (NRTL) has it been examined and approved by a designated electrical equipment inspector?	<p>During manufacturing ABB Bomem performs a Dielectric test on each unit to guarantee equipment safety as per the same CSA standards.</p> <p>All AC equipment is cover by a safety standard:</p> <ul style="list-style-type: none"> - Power Bar (VDE, CSA,, cURus, PSE) - Thermostat (UL) - Agilent modules (CSA, UL) - Heater (cURus) - Motor Controller (cURus) - Line filter (CSA, UR, DVE) - 24V PS (cULus) - 28V PS (cULus)
Please list those pieces of your AC-powered equipment that have not been inspected and certified as safe.	None
NOTE: All AC-powered equipment that has not been inspected and certified as safe will be inspected by a designated Site Electrical Safety Officer prior to being energized.	

67. Operations and Maintenance Support	
Will you require Site staff support during this deployment? (e.g. for cleaning, alignment, calibration, data collection/transfer, rebooting computers, etc) If so, please describe the following: <ul style="list-style-type: none"> • Tasks, frequency, and time to complete • Documentation / procedures available • Training, description and dates 	Yes – Same as current AERIs <ul style="list-style-type: none"> • Clean rain sensors as needed • Clean mirrors as needed • Change desiccant as needed • Other repairs as needed.
Will you need any Site tools or parts? <ul style="list-style-type: none"> • Hand tools (screwdrivers, hammers, etc) • Specialty tools (soldering iron, etc) • Electrical / electronic parts • Test / calibration equipment (oscilloscope, etc) • Simple hardware (nuts, bolts, screws, etc) • Simple building materials (lumber, plywood, etc) 	We will provide tools needed for instrument assembly. The instrument is crated for shipping and a power screw driver, or electric drill with driver bit would be handy for unpacking and packing. A ball driver set and screw driver is required to remove the mirror for cleanings.
Will you need any furnished expendable supplies? (If yes, which and what quantity) <ul style="list-style-type: none"> • Specialty gasses – He, N₂, dry air, etc • Cryogenics – liquid N₂, dry ice, etc • Deionized or distilled water • Cleaning materials 	Not on initial install. Isopropyl alcohol is needed for cleaning of mirrors.

6. Safety	
Does any of your equipment incorporate a laser? (If yes, please provide the class, wavelength, output power, restricted area requirements, eye safe range)	Yes Class 3B, 632.8 nm, 1mW output, Red. No laser radiation is transmitted out of instrument.
Does this equipment emit microwave energy of any kind? (If yes, please provide the frequency, output power level, restricted area requirements)	No.
Does this equipment emit acoustic energy of any kind? (If yes, please provide the output dB, and restricted area requirements.)	No
Does the equipment incorporate nuclear material or emit ionizing radiation? (If yes, indicate the isotope, amount, type of emission (alpha, beta, gamma, X-ray, etc), activity level, containment, and handling procedures.)	No
Will any work be performed at an elevated area (workers feet more than 6 feet above ground level) for the installation and/or operation of this equipment?	Yes
Will you be bringing/using any compressed gases?	No
Will you be bringing/using any cryogenics (e.g. liquid nitrogen or dry ice)?	No
Will you be bringing/using chemicals (reagents, solvents)? If yes, please indicate which chemicals, their quantities, their purpose, and describe how you plan to store, handle and dispose of them)	No
What personnel protective equipment (PPE) are you bringing to facilitate the safe handling of the chemicals?	None

Will you be bringing/using any other hazardous materials?	No
Will there be any waste generated by the operation of this equipment?	No
Will you be bringing any safety equipment for your operation? (i.e., Fire extinguishers, safety glasses/goggles/face masks, etc)	No
Will you be bringing any safety signs for your operation? (i.e., Restricted area, microwave radiation, etc)	No
Are there any other safety-related issues associated with your activities while on-site?	No

7. Additional Information	
Please provide any additional information you feel is necessary to support your deployment.	We would like site staff to install Time Domain II on the instrument computer. This can probably be done during the checkout period at SGP.