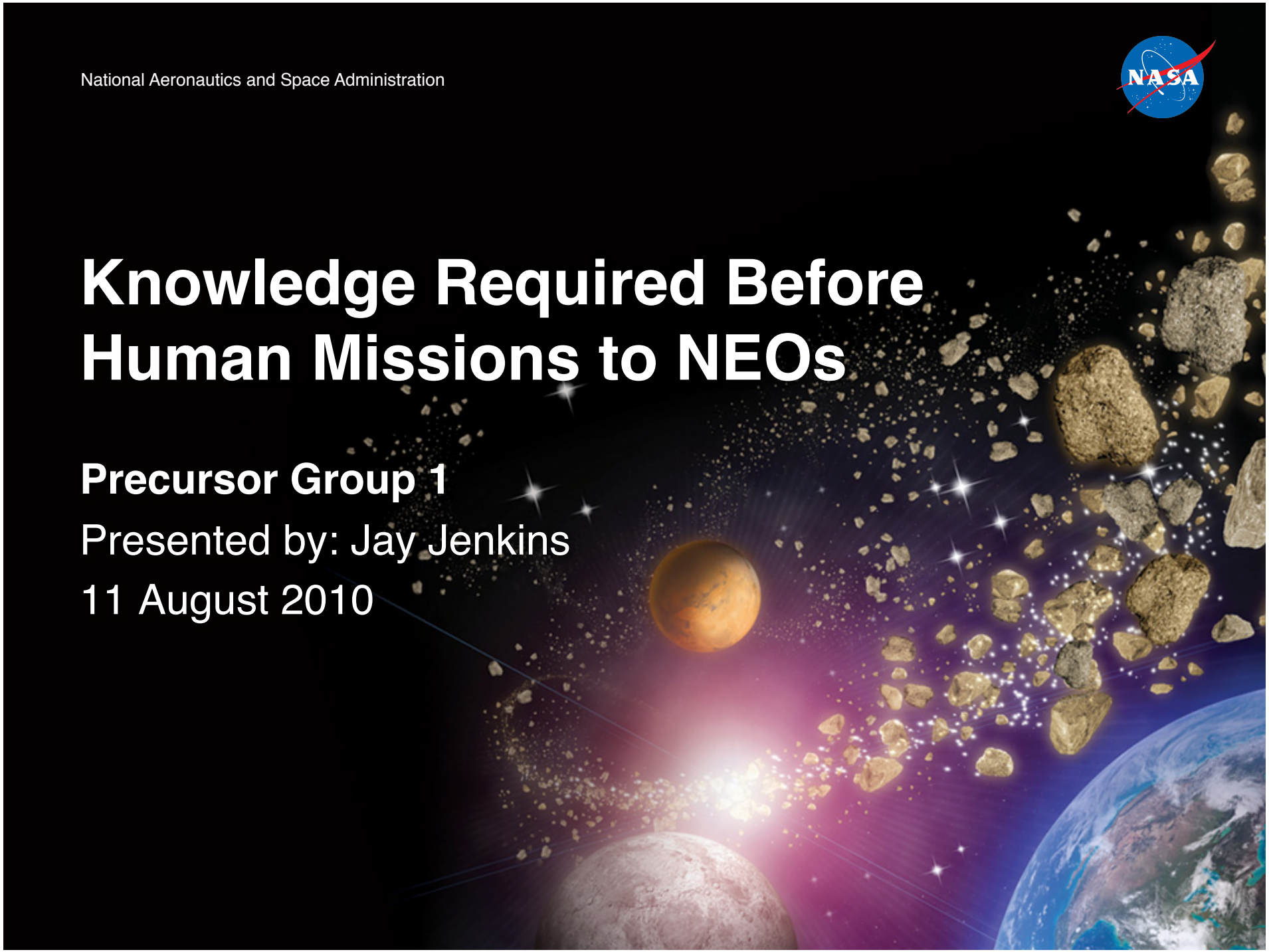
National Aeronautics and Space Administration



Knowledge Required Before Human Missions to NEOs

Precursor Group 1

Presented by: Jay Jenkins

11 August 2010

Knowledge	Measurement
survey to fill out target list	IR survey map-Venus Trailing Orbit; robust ground observations photometry/imaging;perturb and measure response-poking;multi-freq sesimic shaking, SPR, presence of satelllites and debris
structural stability-local/regional stability of surface	
relationship between distant remote sensing and near-in sensing	IR spectra
electrostatic properties	langmuir probe, light meter probe
toxicity	sample return
abrasive/corrosive properties	microscopic imagers, mechanism lifetest
dust mechanical properties, sharpness function, size distribution	thermal imager

Knowledge	Measurement
levitation properties	thermal imager
response of tissue to the broad spectrum of radiation	tissue equivalent detector (TED)
surface chemistry	APXS, mossbauer spec, gamma ray - broad spectrum sensor
spin state	imaging
characterization of NEO population (debris)	wide field, ground-based telescopic survey - sizes and spin rates
wobble	angular momentum vector

Knowledge	Measurement
radiative properties-total dose	neutron albedo, high energy particle spectrum
orbital debris environment around NEO	hi res imager on approach
	imaging, GPR, and contact probes samples (poke and pull tests) over the whole object (penetrometry)
structural integrity	
porosity and mass distribution material for ISRU	radio science spectra
temporal changes over time	telescope measurements

Knowledge	Measurement
Determine gravity model	radio science and anaylsis of issue
Ops on microgravity NEO objects	grappling measurements, mechanical properties
Prox Ops, maneuverability issues around NEO's validation of models	Maneuverability demo around NEO

Backup

Parking Lot

- Optional chart

Possible Breakout Discussions for Tomorrow

- Optional Chart