

DOWNRANGE POWER & DATA DISTRIBUTION - OVER 300 METERS

Function: The section will explain in general terms, the basic design requirements for downrange power and data distribution to control Next Generation Army Target System (NGATS) range targetry and its associated equipment.

General Summary: Lanes and targets on ranges greater than 300m deep from the firing line to the end of the training area will be powered from downrange power centers (PC) located on the range. All targetry will be controlled over Ethernet based networks. These networks will be comprised of a combination of fiber optics and copper based systems maximizing the use of Commercial Off The Shelf (COTS) electronic components and standard designs. Downrange infrastructure hardware (i.e., switches, routers, media converters, etc.) is avoided where possible due to extreme weather conditions, a high potential for damage due to the nature of live fire ranges and the avoidance of specialized maintenance activities.

Targetry Power Requirements:

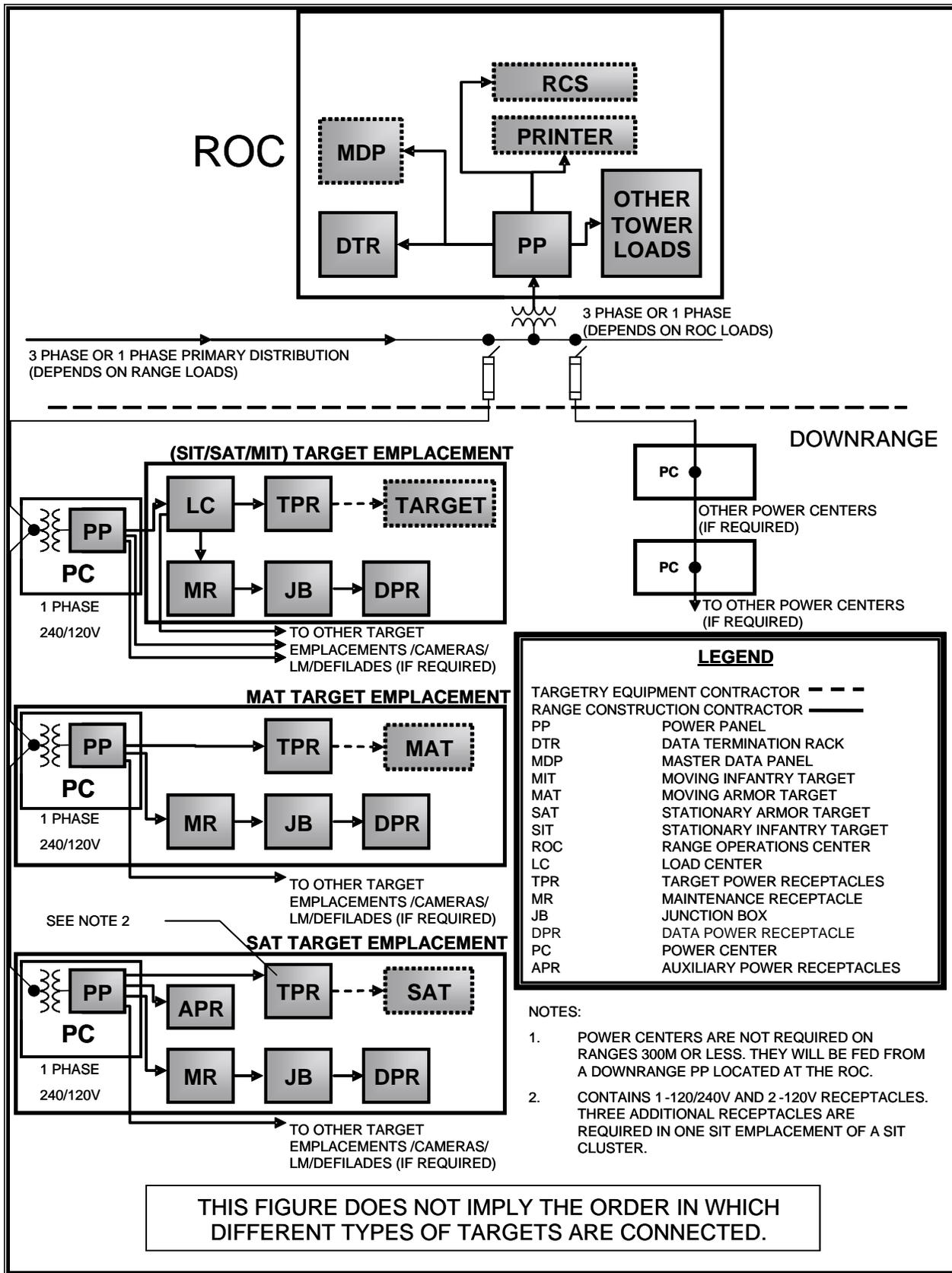
EMPLACEMENT TYPE	POWER FEED TYPE	PEAK	STATIC LOAD	DESIGN LOAD
SIT with Thermal Target	120/240V, Single Phase	700VA while raising or lowering target. Add 260VA if Thermal Target is utilized.	50VA Thermal Target 260VA	960VA
SAT with Thermal Target	120/240V, Single Phase	2kW while raising or lowering target. Add 1kVA if Thermal Target is utilized.	100VA Thermal Target 1kVA	2.8kW
MIT	120/240V, Single Phase	2kVA during system charging	50VA	2kVA
MAT with Thermal Target	120/240V, Single Phase	3.8kVA during system charging	100VA	3.8kVA
Range Control System (RCS)*	120V, Single Phase	Associated Control Equipment		5.37kVA (ROC-Tower only)
* PEOSTRI supplied equipment, coordinate during design.				

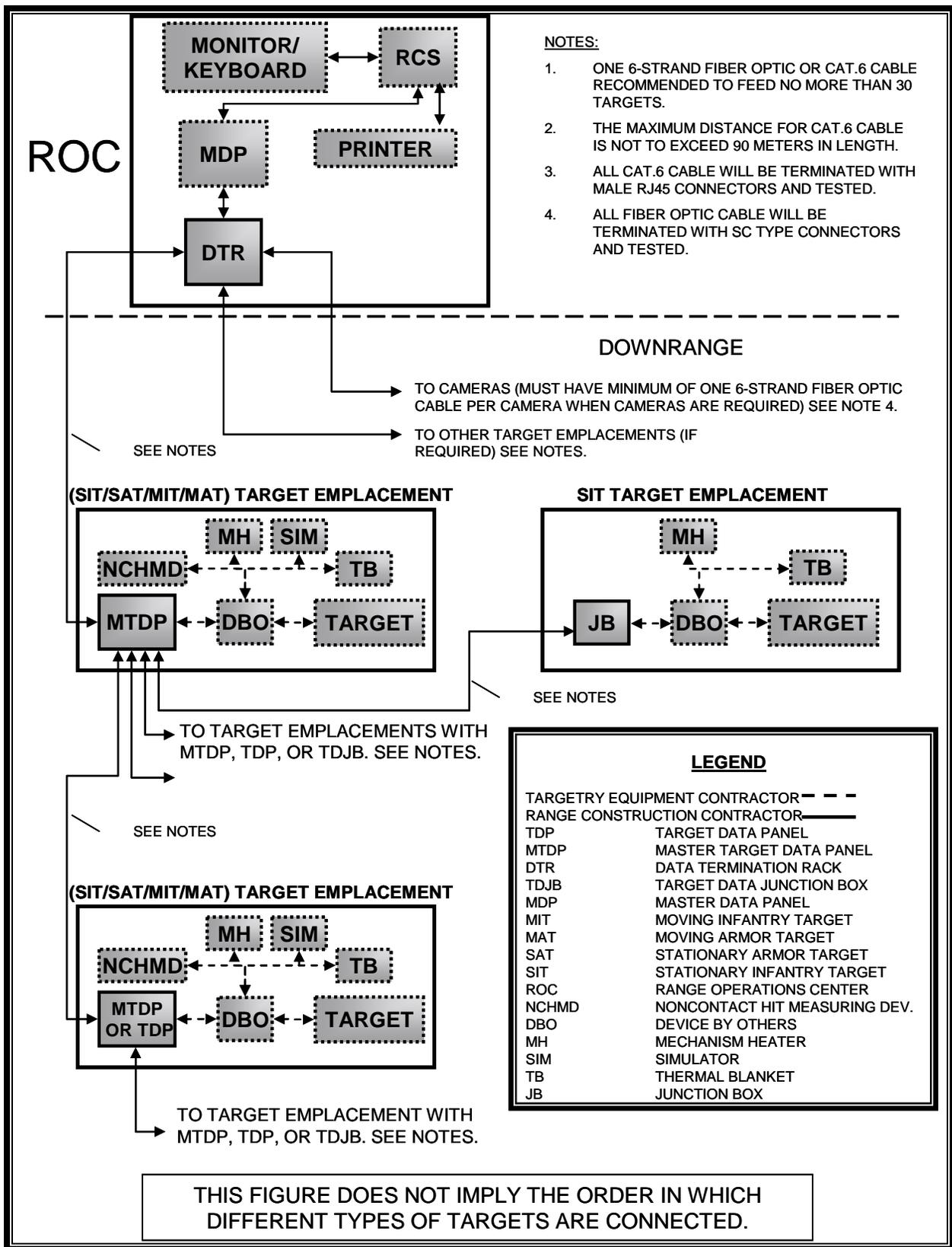
TARGETRY POWER TABLE

Targetry Data Requirements:

RANGE TYPE	MEDIUM	SPEED	BANDWIDTH	WAVELENGTH/ FREQUENCY
Ranges 300 meters & under	Multimode Fiber Optic Cable, 62.5 Micron.	Minimum 10Mbps	Min 200Mhz·km	850nm
			Min 500Mhz·km	1300nm
	Category 6 Cable	Minimum 10Mbps	200Mhz	200Mhz
Ranges Over 300 meters	Singlemode Fiber Optic Cable, 8.3 Micron.	Minimum 10Mbps Maximum Unlimited	Unlimited	1310 to 1550nm
	Category 6 Cable	Minimum 10Mbps	200Mhz	200Mhz

TARGETRY DATA TABLE





DOWNRANGE DATA DISTRIBUTION

General: Electrical power distribution will conform to the American Electrical Institute (AEI) and Technical Manual (TM)) 5-811-1. Three phase or single phase primary power will be extended to the range site depending on range load. Voltage regulation and/or metering may be required. The voltage supplied must be maintained within 5% at a frequency of 60Hz, +/-0.5; the design agency will verify the power supply for each site.

Downrange Power Distribution: All conduits and/or cables should enter and exit from the side or rear of the emplacements. This cable routing helps to minimize damage to the cables from range operations and maintenance crews performing berm repair.

Ranges over 300m shall distribute primary power downrange via Power Centers (PC). PC's can contain primary switches, sectionalizers, transformers, and Power Panel's (PP). From the PP located inside the PC, power cables shall be distributed to the Load Center's (LC) at the emplacement and shall continue to the next emplacement or cluster if required. Also fed from the PP's shall be limit markers, camera enclosures, and defilade position emplacements as required. Operating voltage at the most distant emplacement shall not be less than 95 percent of the supplied secondary voltage. SIT Cluster detailed information is discussed elsewhere in this manual.

Downrange Data Distribution: The data distribution originates in the ROC Data Termination Rack (DTR). The ROC-Tower, ROC-Small, and ROC-Large details are discussed elsewhere in this manual. Fiber optic cabling shall extend from the Data Termination Rack (DTR) downrange to the target emplacement lanes. For ranges over 300m and up to 1000m, multimode fiber optics must be used. For ranges over 1000m, singlemode fiber is required. All data networks will serve a maximum of 30 single targets per homerun with a SIT cluster being recognized as one single SIT target emplacement. The target emplacements in each lane can be "daisy-chained" or serially connected with the copper and/or fiber optic data cables continuing from emplacement to emplacement Master Target Data Panel (MTDP) or the Target Data Panel (TDP) as long as the distance between emplacements does not exceed the 90 meter threshold. If the distance exceeds 90 meters then fiber optic cable must be used. SIT Clusters require special network considerations and are discussed elsewhere in this manual.

FOR TANK RANGES: The Digital Multi-Purpose Range Complex (DMPRC) and Digital Multi-Purpose Training Range (DMPTR) will be provided with a 120Vac, 15 amp, NEMA L5-20R , 3-wire, twist-lock receptacle for the instrumentation emplacements at the fixed defilade positions. The instrumentation emplacements will also require a RF network connection that is to be provided by others.