BREVET DE TECHNICIEN SUPERIEUR
ÉLECTROTECHNIQUE / ÉLECTRONIQUE

SESSION 2001

ANGLAIS

(groupe 18)

Dictionnaire bilingue autorisé
Calculatrices, lexiques et autres outils personnels interdits.

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TRAVAIL À FAIRE

I) COMPTE-RENDU EN FRANÇAIS. (12 points)

Vous vous efforcerez de mettre en évidence les informations les plus importantes contenues dans le document (de 200 à 250 mots).

II) TRADUCTION (8 points)

Traduire en **français** le passage entre crochets page 3/3 :

de : "Scientists have also made major strides… " (ligne 20) jusqu'à : "…would be slashed to a few hundred. "(ligne 28).

Scientists plan giant stairway to the stars

It would be the ultimate theme park ride, a stairway to heaven that would hurtle passengers thousands of miles into orbit.

Space engineers say it is now possible to think seriously about constructing a space elevator that would fire vehicles up a track rising vertically into space.

The concept – according to Nasa plans released last week – would involve the lowering of cables from a space station moored 22,300 miles above Earth.

At this altitude, known as geostationary orbit, the velocity of a satellite or spaceship moving round the globe matches Earth's rotation. The craft then hovers over a single spot on the equator. Cables linking it to the ground would therefore remain fixed, like a Tube line to the stars.

At a recent workshop at the Marshall Space Flight Center, Alabama, engineers and industry representatives revealed that breakthroughs in materials science now made the building of space cables far more realistic. Scientists have developed materials constructed from microscopically thin tubes – nanotubes – of carbon. These have the strength of diamonds but are highly flexible.

"The development of carbon nanotubes shows promise," said the author of Nasa's space elevator plans, David Smitherman, of Marshall's Advanced Projects Office. "They're lightweight materials that are 100 times stronger than steel. We came out of the workshop saying this is no longer science fiction."

[Scientists have also made major strides in the development of electromagnetic propulsion systems that would drive passenger vehicles up the space elevator. Essentially these space trains would operate on the same principles which propel trams between terminals at many airports. These use magnets instead of wheels, a feature that engineers say would reduce wear and tear on the vehicles while allowing them to reach speeds of several thousand miles an hour.

Once a space elevator was constructed, rockets – which devour thousands of tonnes of explosive fuel to place a mere few hundred pounds of payload in orbit – would become redundant. The cost of placing a human in space – currently priced at tens of millions of pounds – would be slashed to a few hundred.]

With a cheap and easy method of putting payloads into orbit, it would become relatively simple to construct giant spaceships and stations from components ferried up on the space elevator. The manned exploration of the solar system – as Clarke envisaged in *2001, A Space Odyssey* – would become reality.

Some technological hurdles still have to be overcome. A tower - 30 miles high - would have to be constructed on the ground to tether the elevator's lines, say the engineers.

In addition, a huge counter-balance – spinning beyond the orbit of the elevator's space terminus – would be needed to keep the cables taut. Only a small asteroid, could fit that bill. But engineers are confident: "In 50 years or so, we'll be there," said Smitherman.

The Observer (Robin McKie – Sept. 10, 2000)