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| <p><b>Slide 1</b><br/>Title</p>                                                                                                      | <p><b>Accelerator Tunnels beyond the Lab Borders and their Neighbors</b><br/><br/>Petra Folkerts, Director of Public Affairs, DESY, Hamburg, Germany<br/>Talk at Fermilab, June 22,2004</p>                                                                                                                                                                                                                                           |
| <p><b>Slide 2</b><br/>Europe<br/>Animation</p> <p><b>Slide 3</b><br/>Sat-Foto mit<br/>DESY site<br/><br/>Albrecht<br/>einblenden</p> | <p>Good evening, Ladies and Gentlemen, and kind regards from Hamburg, the second largest and most beautiful city in Germany – at least that’s how the people of Hamburg see it. I would also like to pass on to you the best wishes from my boss, Albrecht Wagner. He is the Director General of DESY, one of the two European sister labs of Fermilab. He is often a guest here himself, and sends a special hello to you, Judy.</p> |

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| <p><b>Slide 4</b><br/>Fermilab site</p> | <p>First of all, I would like to thank Judy Jackson very much for the invitation. I am very happy and quite a bit proud to be able to tell you about our experience concerning the cooperation with our neighbors. What's more, I am happy about every occasion to come to Fermilab. I always feel at home right away. That's because Fermilab and DESY are so very much alike. Today for instance, I just happened to meet a DESY scientist who is spending a few weeks carrying out research at Fermilab. And I could just as well meet Fermilab</p> |
| <p>Foto PAO<br/>members</p>             | <p>scientists whom I saw last week at DESY. And last but not least, I see my colleagues of the Fermilab Public Affairs Office again, who have become real friends in the meantime.</p>                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Slide 5</b><br/>Sat + AW</p>      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p>IF einblenden<br/>TZ+CM</p>          | <p>At this point, I would also like to thank Ilka Flegel, who has translated this talk. And thank you also to Christian Mrotzek and Thomas Zoufal, who did a great work with animations and pictures.</p>                                                                                                                                                                                                                                                                                                                                              |

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| <p><b>Slide 6</b><br/>Talk<br/>- DESY</p> <p>- HERA</p> <p>- TESLA</p> | <p>In my talk „Accelerator Tunnels beyond the Lab Borders and their Neighbors“, I would first like to introduce the DESY lab to you – as I just said, one of the sister labs of Fermilab, and – by the way – a long-time close collaborator of the Brookhaven National Lab, where our colleague Marge Lynch comes from.</p> <p>Then I would like to tell you the story of HERA – an accelerator ring tunnel which is very similar to Fermilab’s Tevatron. But since DESY is located in a large city and not in the prairie like Fermilab, our site is “somewhat” smaller. And that’s why HERA runs out beyond the DESY borders, which means it lies beneath an inhabited neighboring area.</p> <p>Third, we will be looking into the future. I will present the 33-kilometer-long linear collider – a new accelerator which is not ring-shaped any more, but straight. This major project is a new challenge for the public relations work, especially concerning the relationship with the neighbors of the institution which will host the collider.</p> |
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| <p><b>Slide 7</b><br/>Gründungs-<br/>Foto</p>                           | <p>What does “DESY” mean? Its long name is Deutsches Elektronen-Synchrotron, which means German Electron Synchrotron. An electron synchrotron is a special type of particle accelerator, and since it was the first accelerator to be built at the new German particle physics lab, the research center was named after it. This was around 50 years ago: DESY was officially founded on December 18, 1959. As such, Fermilab is almost the “little sister” of DESY, since it was established in 1967. Like all research centers of this kind, DESY is a publicly funded institution, which means it is paid for by taxpayers’ money. In our case, it is a national institution, and the about 1500 DESY staff members are employed by the Federal Republic of Germany.</p> |
| <p><b>Slide 8</b><br/>DESY<br/>Luftaufnahme<br/>Hafen-1<br/>Hafen-2</p> | <p>Unlike most of our sister labs with large accelerator facilities, the DESY site is located within the limits of a densely populated city, only 20 minutes by car from downtown. The name of this city is Hamburg. It is located in North Germany, on the Elbe river, and has the second largest port in Europe. Today, the port mostly accommodates cargo freighters. In former times, it was the starting point of the passenger ships to America.</p>                                                                                                                                                                                                                                                                                                                  |



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| <p><b>Slide 10</b></p> <p>Blick auf<br/>DESY-<br/>Gelände</p> <p>Fahnenmast</p> | <p>Today, we have a total of seven accelerator tunnels, and there are around 70 buildings on the DESY site. The University of Hamburg also moved onto the site with three of its physics institutes. To accommodate the 3000 guest scientists participating in the DESY research, there are guest houses with a total of 250 beds.</p> <p>Since DESY is located right in the middle of a large city, it was natural from the beginning to build up and maintain a good relationship both with the direct neighbors and with all the inhabitants of the city. One important element in this respect is the open campus. Pedestrians and cyclists for instance use the road between the main entrance and the side entrance as a shortcut between two main streets. And visitors have to consult the gatekeeper only in case they don't know their way around the DESY site. By the way, that this is so easy is a proof that the DESY facilities are safe: In every institution with dangerous facilities, one would have to identify oneself and to register into the guest lists, or even to be in possession of an identification card that has to be carried all the time in a visible manner.</p> |
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| <p>Same<br/>Slide 10</p> | <p>DESY very soon had a PR department – just a small one, but 40 years ago this was something very unusual, at least in Germany. This department organized the first Open House as early as 1975. Of course, during these Open Days, the accelerator tunnels are also open to the public. By the way: Can an accelerator really be dangerous if the operators close it down at 8.30 in the morning and the first visitors stand beside it at 9 o'clock? More likely not. But besides organizing outreach events, this department had – and still has – a very important function for the neighbors: It is always available, directly, without lengthy detours or an answering machine in between. Every question is answered promptly and individually, and one could just come and drop by if necessary. After a while, one “gets to know each other”, which is a real advantage. – My impression is that this is exactly how things are handled in the Fermilab Public Affairs Office too.</p> |
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| <p><b>Slide 11</b><br/>Kalenderblatt,<br/>Foyer<br/>Rathaus</p> | <p>The good relationship with the people of Hamburg is also due to a large extent to the fact that DESY was welcome in Hamburg from the very first day, and that it was received in a very positive way. The contacts with the local authorities are smooth, and the support in case of problems is swift and uncomplicated. DESY is part of the sightseeing program for the guests of the City. It is allowed to show exhibitions in the foyer of the town hall, and it is mentioned in most of the books and information material published by the City.</p>                                                                                                                                                                                                                                                                         |
| <p><b>Slide 12</b><br/>Fermilab<br/>Fotos<br/>Bisons, ...</p>   | <p>At this point, I would like to mention something that I think is of the highest consequence: the open campus. It is one of the most important prerequisites for a good relationship between the lab and its neighbors – if not THE most important one. All the particle physicists worldwide hope that it will soon be possible, also here in the US, to carry out research again without any borders and without the new visa restrictions, just as it was possible before that terrible September 11. Especially for Fermilab, which is located in these wonderful surroundings with its many natural attractions, I wish Judy and her colleagues that their neighbors may be able to meet the Fermilab scientists again without hindrance for jogging, fishing, pick-nicking, animal watching and so on as soon as possible.</p> |

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| <p><b>Slide 13</b></p> <p>Text:<br/>conclusion</p> <ul style="list-style-type: none"><li>- open</li><li>- direct</li><li>- representa</li><li>.</li><li>- events</li></ul> | <p>Let me now sum up this first part of my talk and list some main points which are from our experience most important for a good relationship between an institution like Fermilab or DESY and its neighbors:</p> <ul style="list-style-type: none"><li>- first of all an <i>open campus</i>;</li><li>- then the <i>direct availability</i> of the institution for questions etcetera.</li><li>- And, very important also, a good relationship with the representatives of the city and the neighboring communities.</li><li>- There also have to be <i>events for the public</i> which take place on a regular basis.</li></ul> |
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| <p><b>Slide 14</b><br/>Inj.Schema</p>     | <p>Let us now jump to the year 1984. At that point, DESY already had five accelerators, the largest of which, named PETRA, could be built just like all previous DESY tunnels and buildings, that means without having to take additional outreach measures for the neighborhood. This was because the 2.3-kilometer-long ring just enclosed the DESY site – but it did not leave it.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Luftaufnahme,<br/>HERA +<br/>PETRA</p> | <p>In 1984, a new era began: For the first time, the DESY site was not large enough to accommodate the next accelerator. Inevitably, the relationship with our neighbors became more intense, but also – understandably – not as trouble-free as it had been before. The name of this new “super microscope” for the investigation of the smallest building blocks of matter is HERA. It has a circumference of 6.3 kilometers. The facility is located in an underground tunnel in a depth of approximately 25 meters below the surface, and 80 percent of it actually run beyond the DESY borders. The concerned neighborhood includes a popular Hamburg residential area, a public park and an industrial area.</p> <p>We have been in contact with the HERA neighbors since 1984, the beginning of the construction of HERA. We had invited them to DESY only a few weeks before – which was much too late by today’s standards – in order to inform them all together in a joint event about the new project. We did this on a rather general level which did not include the concrete inconveniences caused by the construction work, because, in fact, we had not thought about it, and we were not sure ourselves about which proportions these would take on.</p> |

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| <p><b>Slide 15</b><br/>HERAKLES +<br/>Tunnel</p> | <p>At this point, I can just advise all of you: Don't believe the civil engineers! What for them – who are accustomed to much more impressive things – is just a harmless construction site, is absolutely frightening for the concerned neighbors. What I'm talking about here is the big tunnel boring machine – our "mole", which first drilled the whole underground tunnel for HERA and then fitted it with prefabricated concrete segments – piece after piece, meter after meter, six days a week, 24 hours a day. It took the mole around two-and-a-half years to return to its starting point. This tunnel boring method is absolutely safe for the houses located above the tunnel. The inhabitants however do not feel so safe, especially when the glasses in the cupboard start shaking day and night, and a deep rumble is to be heard in their cellar – the whole thing lasting about two weeks.</p> |
| <p>Steine</p>                                    | <p>Then in June 1985, we were suddenly in very close contact with our neighbors! The reason was that three days after the boring machine started to tunnel beneath the houses, at 3 o'clock in the night, big rocks were suddenly blocking the way, and this made our neighbors jump out of their beds and run into the street. The only thing we could do the next morning was to ring at every door, with a bunch of flowers in our hands, in order to apologize and to belatedly explain the situation.</p>                                                                                                                                                                                                                                                                                                                                                                                                      |

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| <p><b>Slide 16</b><br/>HERAKLES +<br/>Tunnel-<br/>Radfahrer</p>                                                         | <p>In fact, our neighbors were so surprised and pleased by this personal course of action that they could not go on being mad at us, and resigned themselves to the fact that the inconveniences would be going on for a few days. After this was settled, the only important thing left to do was to explain to them personally and openly what they still had to expect – without any glossing over.</p> <p>We were lucky that this incident occurred right at the beginning of the tunneling work, because it made us learn a lot: After this, we played the vanguard of the “mole”, warning the people concerned and giving them our phone numbers. In fact, people were not really happy with our mole and did actually complain – and there was one teacher whom we finally offered to sleep on the DESY site for the two weeks. But there was no severe resistance and no legal action taken against us. – So this also shows what is really important in the relationship with the neighbors:</p> |
| <p><b>Slide 17</b></p> <ul style="list-style-type: none"><li>- individual</li><li>- timely</li><li>- truthful</li></ul> | <ul style="list-style-type: none"><li>- the <i>individual contact</i></li><li>- <i>timely information</i> of the people concerned</li><li>- and <i>truthful information</i> (don't scare people, but don't play down anything).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| <p><b>Slide 18</b><br/>Animation<br/>TESLA-Flug</p> | <p>Finally I would like to take a look at the future together with you. As I already mentioned, it will not be ring-shaped any more, but straight. I am talking about the 33-kilometer-long linear collider which, according to particle physicists around the world – from their point of view – could become operational in around eleven years or so. It is clear already today that there will be only one accelerator of this kind in the world, and that it will be an international linear collider which will be built, financed and operated jointly by all interested particle physics labs. In order to be able to use the best possible technology for this valuable future project, three different versions have been developed during the past ten years. These studies include the surveys for possible locations carried out here in the US, or in Europe, or in Japan. In this case, “in Europe” means in Germany – in the neighborhood of DESY, to be more exact. DESY started its intensive cooperation with its potential future neighbors as early as 1996, that means much earlier than in the case of the HERA tunnel, and this although the project has not yet been approved – even now. The experience we gained in this work is what I would like to tell you about today.</p> |
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| <p><b>Slide 19</b><br/>TDR +<br/>Meeting</p> | <p>The European proposal for this 33-kilometer-long linear collider is called TESLA. By the way, I should speak in the subjunctive form from now on, since – as I said – nobody knows today if there ever will be a TESLA in Hamburg. But the subjunctive sounds always very awkward, and what's more, its use would prevent me even more from respecting the time allocated to my talk. But you should please keep in mind how the following is meant.</p> <p>Even if TESLA was and still is a vision, the communication with the TESLA neighbors was already a reality at that time. And with TESLA, we did indeed embark again into a new era in the neighborhood communications work. In fact, it was really like an enormous long-jump – which, by the way, takes us directly to today's evening at Fermilab. For it is quite possible that the linear collider tunnel will some day be built here in Illinois – maybe in the underground below your community? Who knows ...</p> |
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| <p><b>Slide 20</b><br/>Cavity-Foto +<br/>e+e- Coll.</p> | <p>So, what has changed in the neighborhood communications work?<br/>First of all, let me say a few words about the new framework conditions:</p> <p>The first point: The “thing” is 33 kilometers long and crosses the borders of the City of Hamburg after the first three kilometers. Beyond these, we are in Schleswig-Holstein, a federal German state with a mainly rural population. The further we get from DESY, the less our future TESLA neighbors know about DESY.</p> <p>The second point: For TESLA, we not only need to tunnel beneath houses and plots of land, we also have to construct new buildings. This means that we have to buy a lot of plots – if it cannot be avoided, even together with the houses standing on them.</p> <p>The third point: Times have changed: People have become more ecologically aware, their fear of technology has increased, and they want to have a more strong influence on big projects. – It’s just not 1984 any more.</p> |
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So what does this mean for the communication with the neighbors?

As I mentioned before, it means above all that one has to begin much earlier. In fact, at that time, we thought that the groundbreaking ceremony for the linear collider could take place in 2003. And this is why we contacted the mayors of the 15 little communities along the tunnel route already in November 1996 – as soon as the tunnel route was fixed –, in order to inform them about our new project.

And now you have to imagine this part-time mayor, who spends his days running his farm and his evenings deciding when the kindergarten in his village will receive a new roof, sitting there with a letter from DESY – Who is this DESY, anyway? The letter notifies him that a tunnel is to be built beneath his town – and what's more, it's a tunnel for particle physics. This cannot work out all right, as you can surely imagine.

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| <p>Noch<br/>Slide 20</p> | <p>But it did! And this was because we got support from an important local official. He was the Administrative Director (Landrat) of the Pinneberg district, to which these 15 communities belong. After the then Director General of DESY informed him in a personal conversation about this fascinating project and our undertaking, he at once and enthusiastically started supporting TESLA. It was him who invited the representatives of the 15 communities to a meeting in a small town inn – which was quite a “normal” procedure for the mayors. And after this meeting, DESY and TESLA were well established in the opinions of the mayors. From then on, they helped us getting into direct contact with our future neighbors.</p> <p>This example shows very clearly that an institution like DESY or Fermilab can carry out its fascinating research only with the support of the representatives of the neighboring communities – that is, with your support.</p> |
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| <p><b>Slide 21</b><br/>Schema<br/>Tunnel mit<br/>Hallen</p> | <p>In order to give you an idea of the size of this project and its neighborhood communications work, I have to briefly describe the design of the TESLA facility. This diagram shows the facility from above and from the side. The tunnel runs in a depth of 10 to 30 meters, it is a big concrete tube with a diameter of 6 meters. The new research site with a large underground experimental hall and various other buildings is located right at its midpoint – to be more precise, in a quiet village with around 1300 inhabitants. A number of supply halls providing access to the underground tunnel through a shaft will have to be erected at regular intervals along the tunnel route. For each of these halls, we need an 80 000 square meter plot of land. Experts are estimating that the complete construction will take about eight years, during which the tunnel for instance will have to be built with the help of three or four “moles” working at the same time.</p> |
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| <p><b>Slide 22</b></p> <p>Luftbilder</p> <p>TESLA-Orte</p> <p>- next</p> <p>- next</p> <p>- next</p> <p>- next</p> <p>- next</p> | <p>This is a gigantic construction project, involving at least 1000 landowners. Even with an intense neighborhood communications work, we will also have to be prepared for protest, possibly going as far as legal action, which could interrupt construction in the worst case for several years. To prevent this, DESY wanted to apply for a so-called “project approval procedure” for TESLA. This is a fixed legal procedure in which the construction project is inspected in all its facets – including possible negative effects on the environment – by an independent state authority. In a public procedure, everybody concerned – including communities and private persons – can put forward their objections against the project. As a result, it may happen that the plans have to be changed in some points. This procedure, which takes at least one year, then results in an official approval which is comparable to a law and cannot be contested in court – by nobody, not even by landowners who have to sell their houses, but don’t want to do it.</p> |
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| <p><b>Slide 23</b><br/>Schema<br/>TESLA-<br/>Trasse</p> | <p>Finally, it did not come to this project approval procedure for TESLA, but DESY has been deep into the preparations for it. I am relating this here because the neighborhood communications work becomes a “high wire act” in many respects, as soon as a project has to undergo such a legal procedure. For during the individual information of the residents who are personally concerned by the construction project, we have to be extremely careful not to say too much, not to hand out copies of plans, or – even worse – to come to agreements which could later on be interpreted by the opponents of the project as anticipated negotiations. – And all this despite the fact that it is our goal to always provide our future neighbors openly and promptly with all the information that is interesting for them. But even this is something which one can explain to the future neighbors and local representatives, and which they eventually understand.</p> <p>Despite these restrictions, we are in any case in no danger to become unemployed – on the contrary: There are many possibilities for action. To give you an idea about what a research center like Fermilab or DESY can do, together with its neighboring communities, to prepare for such a future project, I would like to end my talk with a list of five examples from our TESLA neighborhood communications work:</p> |
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| <p><b>Slide 24</b><br/>Luftbild<br/>Borstel-H.</p> | <ul style="list-style-type: none"><li>• Since 1997, we have been inviting groups and single persons from the “TESLA villages” to DESY on a regular basis. They were thus able to gain their own impressions of the DESY campus life, to take a look at the DESY buildings and facilities – and even to hear how much noise they make – and then to discuss all their questions, even the controversial ones, with our experts over a beer and sandwich. And you would not believe how interested our guests were, and how long they stayed – sometimes late into the night, although most of them had started the day sitting on their tractor at six o’clock in the morning. This can not just have been because of the beer and sandwiches! – Until the end of 2002, we had 14 such events.</li></ul> |
| <p><b>Slide 25</b><br/>TdoT HERA-<br/>Tunnel</p>   | <ul style="list-style-type: none"><li>• In April 1998, we organized a “Tunnel Route Day” – as it were, a special Open House for the 15 “TESLA villages”. On this occasion, the around 3000 visitors were also able to view the HERA tunnel, which in principle looks just like the future linear collider tunnel.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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| <p><b>Slide 26</b><br/>Luftbild<br/>Rellingen</p> | <ul style="list-style-type: none"><li>• Since 1997, we have been invited to meetings by communities, stakeholders and other groups, to inform them about the project and answer their questions. Sometimes these meetings were rather “stormy” – for instance in assemblies of inhabitants in villages which we had not managed to inform about the project ourselves – simply out of a lack of manpower –, but in which there were already rumors circulating about TESLA. In these cases, we were always very grateful when the mayor in charge or some other representative of the community was really “in control” and able to keep the whole discussion well-ordered. – Until the end of 2002, we had 13 such events.</li></ul> |
| <p><b>Slide 27</b><br/>Am Telefon</p>             | <ul style="list-style-type: none"><li>• Since 1997, we have been informing the neighbors who were directly concerned by TESLA about the project, the planning status, and its progress on a personal basis – within the bounds of the above-mentioned restrictions. – Until the end of 2002, we had more than 400 such personal contacts.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                   |

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| <p><b>Slide 28</b></p> <p>- next<br/>- next<br/>- next<br/>- next<br/>- next</p>                                | <ul style="list-style-type: none"><li>• As the last point, I would like to mention our EXPO 2000 – a large exhibition about DESY and TESLA covering an area of 1200 square meters, with around 100 exhibits, spectacular video animations etcetera. It was open for five months more or less around the clock, and attracted more than 100 000 visitors. Of course, this exhibition was not made only for the future TESLA neighbors, but we offered them special guided tours through the exhibition, which they attended with great enthusiasm.</li></ul>                                                                                                                                                                                                         |
| <p><b>Slide 29</b><br/>Animation<br/>Flug TESLA</p> <p><b>Slide 30</b><br/>Animation<br/>TESLA-<br/>Beschl.</p> | <p>Well, now you surely understand why a lot of permanent “ambassadors” have to swarm out in order to personally convince all the neighbors living along the route of the linear collider of the fascination of this future project, of its harmlessness, or of its space requirements. These same ambassadors should then also be available as permanent contact persons for the neighbors, to answer their many questions. I am convinced that one needs one such ambassador for every kilometer of accelerator tunnel beyond the lab borders – at least during the planning and construction phase. And to be successful, each ambassador again needs to have a good contact on the spot with the mayor and other officials – which closes the loop again...</p> |

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| <p>Noch Slide 30<br/>Animation<br/>Beschl.</p> <p><b>Slide 31</b><br/>DESY+FNAL</p> | <p>So, as a last word to conclude my talk: Scientists have the possibility to be awarded an honorary doctorate for outstanding services to a university for instance. Outreach people normally do not have this chance. But both eventually can be nominated “honorary mayor” by a community, for outstanding services to the communication between the lab and that community, for instance. So it is with the wish that we will have many honorary mayors here at Fermilab in a few years, that I would like to close my talk.</p> <p>I thank you very much for your attention.</p> |
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